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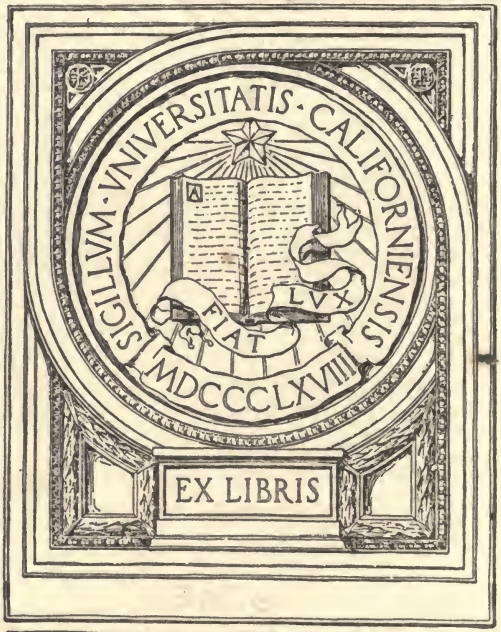
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Teachers' Manual

For the

Elementary Schools of Washington

ISSUED BY THE
DEPARTMENT OF PUBLIC INSTRUCTION

R. B. BRYAN,
State Superintendent of Public Instruction.

OLYMPIA, WASH.:
C. W. GORHAM, PUBLIC PRINTER.
1905.

NORMAL SCHOOL BUILDINGS

ELLENSBURG, CHENEY AND BELLINGHAM

TEACHERS' MANUAL

FOR THE

ELEMENTARY SCHOOLS

OF THE

STATE OF WASHINGTON

EDITED BY THE

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UNIV. OF
CALIFORNIA

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The Course of Study is the measuring rod, or rule, which is used to determine at what point in the years' work in the elementary course a pupil's work has arrived. It should not be used as the Procrustean bed on which to stretch the work of the school in order to secure uniformity.

FROM REPORT OF COMMITTEE OF TWELVE.

A. M. C.
CALIFORNIA

INTRODUCTION.

The chief object of this Manual is to unify and harmonize the school work of the state in accordance with the provisions of the state constitution, requiring "a general and uniform system of public schools," and the laws of the state.

For the first time in the history of this state we have a law permitting local selection of text-books. Heretofore we have had state uniformity. The preparation of a new Course of Study is necessitated by the new conditions. The problem is not an easy one. Under the old system the books were first selected and a Course of Study issued to fit the books adopted. The new law provides for: (1) An outline or general course to be adopted by the State Board of Education. (2) Selection of text-books by more than two hundred separate boards of adoption. (3) The publication of a Manual by the Superintendent of Public Instruction. In the nature of things, this Manual must be sufficiently broad to meet both the requirments of the State Board of Education and the various text-books adopted by the several boards.

It is hoped that the suggestions and instructions given in the Manual will prove helpful, but it is not intended nor desired that teachers shall slavishly follow them. The individuality of the teacher must be given ample opportunity for development. Few radical innovations will be found by any one familiar with the courses in other states. In the preparation of this Manual free use has been made of ma-

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terial from other Courses of Study. This general acknowledgement will explain the omission of quotation marks in some parts of the Manual. It seemed to this department that it would be the height of folly not to make use of the experience of our sister states. A satisfactory Course of Study must be an evolution.

The Superintendent wishes to acknowledge specially the invaluable assistance given in the preparation of this Manual by President T. F. Kane, A. H. Yoder, H. C. Sampson, F. W. Eply, Miss Cora Bratton, B. W. Johnson, Miss Effie Berkman, J. H. Morgan, D. R. Augsburg, L. L. Benbow, O. C. Whitney, J. W. Shepherd, J. A. Tormey, T. A. Stiger, P. A. Williams; also, the authors of the Illinois, Maine, Maryland, Nevada, Oregon and Indiana courses.

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Superintendent of Public Instruction.

OLYMPIA, WASH., Sept. 1, 1905.

READING.

GENERAL DIRECTIONS.

Reading is the most wide-reaching acquisition made by the child in school. No agency is capable of becoming so effective under wise teaching, for at once disciplining and informing the pupil's mind. No study, then, deserves more careful consideration or demands more carefully elaborated plans than this. For in actuality no other study, when unwisely presented, more widely and effectively conduces to bad mental habits.

It must begin, and at every point proceed, on the basis of vigorous, genuine thinking on the part of the child, and the life of such thinking is constant, clear, vivid imaging. The reality and character of such imaging, the teacher should unfailingly put to the proof in some way—by questioning, by requiring drawing or construction, by dramatization or other form of expression.

These remarks lead to the following suggestions:

(*a*) The reading matter must be chosen with wise discrimination, as to its adaptation to the children's intelligence, taste and effort, alike in thought, in spirit, in phraseology.

(*b*) Close alliance must be kept between the reading matter and the children's active interest—other studies, seasonal changes, attractive elements of environment, experiences, etc.—that is, if the books contain selections bearing in a clear, stimulating way on the current work in history, geography or science, or on outdoor phenomena, such selections should be sought out and studied, where and when the association is close and suggestive. Material for Thanksgiving, Christmas and other special days may thus be accumulated; information on places and people may be brought together when most needed. This is meant to correct the mechanical use of the reader, by which the selections are taken in order with no reference to bearing on strong general interests. (Read *d* carefully.)

(*c*) The material chosen for the reading hour should, as a rule, be from the "literature of power"—writings that by reason of their purity, beauty and spiritual strength have become classic.

(*d*) Supplementary reading should be thought of and treated not simply as increasing the bulk of reading matter and exercise in the process of reading—for this may perfect mechanical skill at the expense of the disposition and power to image—but rather (*a*) as enlarging the range of selections for the regular exercise and (*b*) as furnishing a fund from which to draw in enlarging and enriching the various studies of the course—history, geography, literature, science. Material of the

first sort should be in sets of books, sufficient in number to furnish each one of the class a copy and like the regular reading matter, classic literature as a rule. This should work in with the text-books, to give specific selections where and when needed. (See *b*). The second sort may better be in single books or in smaller sets—books of travel, of description of industries and manufacturing processes, of science, of history and biography, of good fiction, especially of historical fiction. These are to be read for information on the topics in hand, either in preparation for the recitation or in the recitation on the subject concerned, pupils selected beforehand reading to the class. The power to read is thus applied to a clearly perceived end, with sharply defined immediative motive, and close and strong association. This is quite important, if not essential to thought getting and to organizing what is got for remembrance and use.

(*e*) Above the primary grades, the assignment of work must be made in such a way as to make a definite presentation of things to be accomplished: (*a*) words to be looked up for pronunciation or meaning; (*b*) allusions to be explained; (*c*) questions of fact to be verified by observation, reading, inquiry, or study; (*d*) questions to be thought of and answered, bearing either on the meaning of more subtile or difficult portions, or on the motives of characters, where these bear on the general thought; (*e*) maps or diagrams or illustrative drawings to be examined or made, and perhaps placed on the blackboard by one of the class, for reference during the reading; (*f*) reviews of other studies or elements of the selection in hand, needed to give the setting or connection.

(*f*) No text-book in reading, which is not in itself a literary whole, is to be taken selection after selection, in the order of the book. But rather the contents of all the readers should be analyzed, and tabulated or indexed together, and the selections assigned when and where they respectively have a clear and significant bearing. (See suggestions *b* and *d*.)

(*g*) The voice should receive attention from the first, and all proper effort made to help the child to control and improve it for expressing thought—his own or the author's thought. Drills for enunciation and articulation will be needed in every grade. These are to be given on words listed because so difficult as to need special attention and on words on which the children are found to fail of good pronunciation. Drill should be had on groups of words, to master difficult combinations and to secure smoothness. In pronunciation make more of pitch of tone than of stress to indicate accent. This enables the child to be very deliberate and distribute his effort so as to give each syllable its full value. The first few minutes of each exercise may well be given to a vigorous exercise along these lines, especially on words occurring in the immediate lesson.

(*h*) The voice is the instrument of thought and emotion. Clear, sharp imagination is essential to either. This makes concrete presentation and motor expression important; hence, in every grade selections

appropriate should be acted out, that is, be given pantomimic and dramatic representation.

(*i*) The grades have been divided into four groups for presenting these directions in more detail—First and Second, Third and Fourth, Fifth and Sixth, and Seventh and Eighth. The teacher is urged to read *all* these directions carefully. Much will be found in common, and yet the directions will be found quite distinct and characteristic for the several groups.

FIRST YEAR.

AIMS IN THE READING.

(*a*) To have the children, *from the first*, weld firmly together the thought and the word or the sentence by which it is expressed. It is of the utmost importance that accurate and clear mental pictures be formed by the children as they read. To this end it is imperative that the reading material be interesting.

(*b*) To lead the children to express the thought in clear, distinct tone, adapted to express the sentiment or the character represented as speaking, and in easy, natural, vivacious manner,—as if they *were* thoughts, *their* thoughts.

(*c*) To help the children become independent readers by giving them such instruction and training in the sounds of letters and groups of letters and in other forms of word-building as will enable them to make out for themselves the new words in their lessons.

SOURCES OF MATERIAL FOR READING LESSONS FOR BEGINNERS.

1. *Room Management.*
2. *Games and Plays.*
3. *Literature.*
4. *Nature Study.*
5. *Objects and Pictures.*

METHODS OF PRESENTING THESE LESSONS—GENERAL.

The first lesson in reading should be given independently of any book, and should be presented in writing on the blackboard. In these lessons the writing should be large, clear, vertical script, swiftly executed in order not to lose the interest and zest of the thought.

1. *Room Management:* After the direction "Stand" is given orally to the children at a certain time each day for a few days, the teacher, instead of saying "Stand," writes the direction upon the board and tells the children to do what the chalk directs. The teacher may have to tell what the chalk says the first time the word is written, and perhaps several times. "Turn," "Rise," "March," "Sit" may be taught in the same way. Gradually let other oral directions give place to the written form.

2. *Games:* The children learn to play a game by following the spoken directions of the teacher; *e. g.*, "Simon says, 'Thumbs up;' Simon says, 'Thumbs down.'" After the children can play this well from the spoken direction, the written direction is substituted.

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In the color game, the teacher, holding up different colored ribbons, one at a time, asks, "What is the color?" The answers, white, blue, red, orange, brown, violet, are written and each child places a check by the name of the color he wishes to wear. When all are named, the game begins. The children stand in a row, each wearing a bow of the color chosen, while the teacher bounces a ball on the floor, calling, "red," "blue," or "yellow." The child wearing the color called for catches the ball, or if he fails, gives up his color and goes to his seat, the game continuing until all are seated. The child remaining last on the floor wins the game.

3. *Literature.* Lessons based upon stories may be dealt with in the same way. Select a familiar story; say to them, "Let us name the parts to be taken." As the children name the different characters, the teacher writes them upon the board, "Silverhair," "Father Bear," "Mother Bear," "Baby Bear," etc. Then the child wishing to take the part of Silverhair steps to the board and draws a line under the word, at the same time saying, "I wish to be Silverhair." Another child makes his choice in the same way, and so on until all the parts are taken. The story is then acted.

Some stories may be recalled by the children under the teacher's unobtrusive guidance in brief sentences, giving the strong simple lines of the story. It is of importance that the children feel that these sentences are theirs, the story of their telling. In this work abundant opportunity will offer to recall the livlier and more valuable phraseology of the classic used and work it into the children's vocabulary, to a large extent. If the teacher can command the use of a hektograph or mimeograph, sets of papers may be made, and used in the class. Some times the children should be given each a copy to take home to read to mama; or, if successive sections are used, the several sheets may be made into books containing the whole story.

Nature Study. When based upon the Nature Study the teacher may write, for example, the names of the spring flowers in blossom at the time of writing, the children giving the names, and reading the lists later. Daily observations of the weather may be used as a reading lesson; as,

1. It is cold this morning.
2. I saw frost.
3. I saw ice, too.
4. Winter is coming.
5. Do you like winter?
6. I do.
7. Hurrah for the winter!

Or the teacher writes guessing games upon the board, *e. g.*:

I am not large. I have four legs. I have a fur coat.
I have short ears. I have sharp eyes. I have a bushy tail.
I run up trees. I eat nuts, What am I?

It is well after having much board work, that the children should have printed lessons on large sheets of manilla paper or card-board

before beginning the use of the books. Small printing outfits are sold cheap now—from $1.50 up—so that every school can afford one. The first charts should be the reproduction in print of lessons already familiar in script. If the children do not recognize the word in print, refer to its written form on the board.

NOTE.—For some time the lessons in print contain only such words as are familiar to the children in script.

5. *Objects and Pictures:* A supply of objects and pictures furnish material for many delightful and profitable reading lessons; such a collection is particularly useful in teaching children who do not speak English.

The first lessons are not truly reading lessons, but are language exercises in which the toys are named over and over again by the teacher, imitated by the pupils. As soon as the children can name any one of the articles as the teacher selects it from the rest, then the word is placed upon the board. Then more conversation takes place; directions are given, as, "Roll the ball," "Bring me the cup," "Put the cup on the chair," etc. As soon as the spoken direction is understood, it is written upon the board.

Suggestions in General: In reading from the board and in the early reading from books, the children look thru a sentence (or paragraph) and know what it says before they try to give it to others; in this way merely *pronouncing words* in place of reading is avoided. The children are taught from the first not to attempt to read aloud what is not perfectly clear to them. Encourage them to be free to ask what a word or sentence means before they are willing to read it aloud.

In planning the lessons for the board, the teacher has before her a list of the words which the children will meet in the fore part of their first readers. Wherever these words can be used well, without in any way detracting from the interest in a game, they are used, but many words not in that list will also be used. These are all common words, however, which the children will soon find in their reading.

As an aid in getting a new word, the children should be taught to look at the word in its setting in the sentence; *e. g.*, in the sentence, "The squirrel lives in a hollow tree," the word "hollow" is not known. When they come to this word they will not attack it at once, but will look forward to the end of the sentence. They will discover that the new word, in all probability, tells what kind of a tree the squirrel lives in. Knowing the kind of trees squirrels choose, they will in most cases give the word without more study. The teacher should write all words upon the board that have not been instantly recognized by the pupils in reading. At the close of the lesson two or three minutes may be given to drill on this list, conducted in a lively, enthusiastic manner.

FIRST THREE MONTHS.

This is an important period in the child's experience; impressions made here are not easily effaced. The teacher should plan the work carefully and present it with zest. A great desire on the part of the

child to learn to read will be of immense help to him in mastering the mechanics of reading. If this desire does not exist, the teacher can arouse it, but not thru uninteresting material, presented in a half-hearted way, is this desirable state of mind awakened or maintained.

The work for the first six or eight, and with some classes, ten weeks, the reading should be from the board. Then a primer may be used, the teacher first putting the lessons on the board, line by line, and the children finding the same line in the book and telling what it says. This putting the lesson on the board first should be continued only as long as the children actually need that help.

As soon as the lessons begin to be difficult, the book in use should be put aside and another one begun, reading as much as the first third.

SECOND THREE MONTHS.

In these three months two primers may be completed, besides many lessons from the board.

THIRD THREE MONTHS.

Two or three first readers may be completed, taking first the easier portions of each. Guard against habits of stumbling, repeating and monotonous reading.

SECOND YEAR.

Text-books—Second Reader or Readers.

FIRST THREE MONTHS.

Begin with a first reader; if possible, one that has not been read, and read it thru rapidly, taking only three or four weeks for its completion. Then the first few pages of a second reader may be used, that giving place to another one, as the work grows difficult. *Do not allow pupils to struggle with reading matter far beyond their depth.* One lesson a day, at least, should be with material that is easily read at sight.

NOTE.—A teacher who has but a scanty supply of reading material on hand can do much to fill the deficiency by collecting from children's papers, school journals, etc., stories that may be mounted on cardboard, cut apart and given to the different members of the class. These may be read in class with much profit and enjoyment.

SECOND THREE MONTHS.

Work continued, following the same plan in general as for the previous three months. Children may make some preparation of the lesson before coming to the class, following such suggestive directions, as,—

1. Read the lesson.
2. Write all the words on paper that are not known.
3. Read again (if not too long) and make a list of all words found out that were not known at first.
4. Make list of words beginning with *m;* list ending in *ing*, etc.
5. Write the names of people and animals mentioned in the lesson.
6. Write all the sentences that ask questions.

THIRD THREE MONTHS.

Two second readers should be completed. Keep the expression good. Give definite directions for studying the lesson as suggested above. Encourage the reading of books aside from the text-book.

THIRD YEAR.

Text-books—Third Reader or Readers.

SUITABLE BOOKS.

Aesop's Fables	Stickney
Danish Fairy Tales	Anderson
Robinson Crusoe	McMurray
Little Classics	———
Fairy Tales	Anderson
Alice in Wonderland	Carroll
Legends of the Red Children	Pratt
Seven Little Sisters	Andrews
Cat Tales and other Tales	Howliston

SUITABLE POEMS.

Robert of Lincoln	Bryant
Hiawatha's Childhood	Longfellow
The Lost Doll	Kingsley
The First Snowfall	Longfellow
Seven Times One	Ingelow
Three Little Bugs	Cary
How the Leaves Come Down	Coolidge
The Mountain and the Squirrel	Emerson

Also, all supplementary reading suggested in the outline on history, nature study, geography, civil government, etc.

THIRD AND FOURTH YEARS.

Suggestions: In the lower primary the necessity for careful drill and preparation is recognized, but in the grades just beyond, the teacher too frequently fails to recognize the fact that the child is still dependent in a degree. As a result the reading is often not as good in the third and fourth years as in the first and second, and grows increasingly poor.

In these upper primary and intermediate grades the child begins to use books for language, arithmetic, and geography. Efficiency in these subjects depends upon ability to get the thought from a printed page. Thought getting is impossible without an intimate knowledge of words. If the child in the third and fourth grades is not independent in the mastery of new words, he should be given phonic drill daily. Do much work in syllabication in the word drill. If the school as a whole is weak make it a general exercise for a few minutes daily. It is as valuable for seventh as for third grade. A word drill should precede every reading lesson and every word drill should mark an increase in power and independence. Write difficult or new words on the board, dividing them into syllables. Then write other words containing the same sounds. If the word *round* is in the lesson, hold the class responsible for *sound*, *bound*, *hound*, etc. In these grades the child should be taught the use of the dictionary. Every day part of the reading preparation should be the looking up of certain words for pronunciation.

The object of oral reading is to be heard, understood and felt. The good teacher will keep this object in mind and will make the children feel that they read to make others understand and feel what is read. To be enjoyable, expression must be natural and sympathetic; articulation must be distinct and enunciation clear. To say to a child, "Read as you talk," is not sufficient. The natural speech may be slovenly. He must be trained to listen to his own speech. He must be trained to a habit of clear, careful enunciation, and a flexibility of tone, until he is not afraid to hear his own voice expressing the emotion necessary to a proper interpretation of the reading in hand. Too often the child is told to read louder when it is meant that he should read more clearly. The result is a high pitched, strained, unnatural voice, which is a degree worse than the low muffled voice which comes through clenched teeth and rigid lips. Give daily exercises to break up rigidity of lips. *A*, *e*, *i*, *o*, *u*, rapidly pronounced is a good exercise for this. Vary the exercise by rapidly pronouncing words which require much lip movement. Drill on pronouncing words clearly, especially words whose endings are often elided. Practice in painting words; *i. e.*, pronounce deep, immense, dreadful, grand, splendid, rushed, etc.. so that the idea of the word is expressed by the tone. Do likewise with whole expressions. Show the difference between the voice necessary for such matter as, "Haste thee, nymph, and bring with thee jest and youthful jollity," and "Bury the great duke with an empire's lamentation." Have children say in concert many sentences simply for the voice.

Should the child in these grades read haltingly, employ the primary device of reading the sentence first silently and then aloud. He will in time come instinctively to read ahead.

Fluency depends upon ability to recognize and pronounce readily the words as seen. Much easy sight reading gives the child confidence in his ability. Sight reading must not take the place of the regular reading lesson, however. The new words add to the child's vocabulary and his thought is stimulated by the reading which is rather difficult. Colorless reading may be brightened by questions. Varying expression may be obtained if thought is put into the manner of questioning. John went down town yesterday to buy a new hat. The child reads it with about equal stress on each word. Notice the different expression you may get. Who went? Went where? When? What for? What kind of a hat? etc. In answering the question the child naturally gets a good, natural expression.

It seems a good plan to read the lesson of the previous day before reading the new one, since it gives one more chance to review the new words of that lesson, and prepares the class for the new and difficult reading.

When the children read clearly, fluently and feelingly, the probabilities are that they will enjoy the reading period, then the teacher has it in her hands to formulate a taste for good literature. She can draw the boys and girls away from what is worthless and demoralizing by creating a desire for something that is better. Good method in reading

will do much. If the children are led to think as they read, they will come in time to care for thoughtful books, and the child who is in love with good books cannot be led far away from what is sane and right in life.

FOURTH YEAR.

Reading for Fourth Year—Fourth Reader or Readers.

SUITABLE BOOKS.

Fifty Famous Stories.....Baldwin
The Bird's Christmas Carol.....Wiggin
Lincoln.....Cravens
Wonderbook.....Hawthorne
Timothy's Quest.....Wiggin
Arabian Nights.....Clarke
Sea Side and Way Side.....Wright
Stories Mother Nature Told Her Children...Andrews

SUITABLE POEMS.

The Leak in the Dyke.....Cary
The Death of the Old Year.....Tennyson
The Children's Hour.....Longfellow
Paul Revere's Ride.....Longfellow
The Sand Piper.....Thaxter
The Nightingale and the Glow Worm.....Cowper
The Pied Piper of Hamlin.....Browning
Barbara Fritche.....J. G. Holland

Also, all supplementary reading suggested in the outlines on history, nature study, geography, civil government, etc.

For directions and suggestions see Third Year.

FIFTH YEAR.

Reading for Fifth Year—Fifth Reader or Readers

SUITABLE BOOKS.

Little Nell.....Dickens
At the Back of the North Wind.....McDonald
Black Beauty.....Sewell
Stories of Colonial Children.....Pratt
Wild Animals I Have Known.....Thompson
Myths of Old Greece.....Pratt
Mopsa, the Fairy.....Ingelow
Stories from the History of Rome.....Beesly
Stories of the Old World.....Church
Lives of the Hunted.....Thompson

SUITABLE POEMS.

The Beggar.....Lowell
The Village Blacksmith.....Longfellow
Seven Times One.....Ingelow
The Blue and the Gray.....Finch

Also, all supplementary reading suggested in the outlines on history, nature study, geography, civil government, etc.

FIFTH AND SIXTH YEARS.

Suggestions: Many of the suggestions for the first four grades apply to these higher grades. A new element becomes paramount here. Much time is given to reading as literature.

If the mechanics of reading have been well taught in the lower grades, children in the fifth and sixth years should be able to pronounce at sight all common words, using the dictionary for unfamiliar words only, and for definitions.

The assignment of the reading lesson should be a matter of very careful consideration. Definite directions should be given for the study period, always making sure that the work assigned is within the power of the child to accomplish within the given period. Correlate history and literature as much as possible. If the class is studying the revolutionary period, Paul Revere's Ride is pertinent reading matter. Miles Standish is a fit accompaniment for the colonial period, as is the day of the first snowfall a good time to read "Snow Bound." Many of the beautiful portions of the reading matter should be memorized, and some of the most striking descriptions should be vizualized, *i. e.*, pictures drawn, illustrating the scenes.

If the lesson is a poem, the following general plan may be suggestive: The teacher should familiarize herself with the poems studied in previous grades and give the children frequent chance to review them, that the melody and rhythm may become familiar. With the little children, the poem is read by the teacher, and little preparation or word study is necessary. Above the third grade a new poem should be given every month, selected for some thought applicable to the particular time.

The source or story should be given first, then the poem as a whole. Often the first reading may be given by the teacher, that the children may more readily get the central thought and feeling of the poem. The unknown words and expressions should be studied. Then the poem should be read in class and parts discussed with reference to the beauty of meaning. Questions may be written on the board to help the pupils to a deeper appreciation. Let the children select the parts they most enjoy, and memorize some of the more beautiful portions. If the poem is one which tells a story, the children should write in their own language what the poet has so beautifully expressed. If the writer is one whose life makes a good sketch use this as another language exercise.

SPECIFIC PLAN FOR POEM — RHOECUS.

Story of the poem.

The thought of the introduction.

Relate the conversation between the Dryad and Rhoecus.

Why was Rhoecus willing to accept a "perilous gift?"

Describe Rhoecus's character.

What is meant by "a faithful heart, but one that too much in the present dwelt?"

Explain, "only the soul hath power over itself."
What was the cause of the remorse of Rhoecus?
Give me your judgment of the punishment he had to endure.
Was it too harsh?
What kind of a spirit did the Dryad show?
Explain, "I can forgive, etc."
What kind of blindness is meant?
Under what obligation was Rhoecus to the Dryad? (How would a young woman feel today if a young man treated her as Rhoecus treated the Dryad?)
Select the nature descriptions.
What part of the poem do you most enjoy? Who is the poet?
Write five quotations, illustrating three of them.

SIXTH YEAR.

Reading for Sixth Year—Sixth Reader completed.

SUITABLE BOOKS.

George Washington.....Schudder
Ten Boys Who Lived on the Road from Long Ago to Now.....Andrews
Grandfather's Chair.....Hawthorne
Tom Brown's School Days.....Hughes

SUITABLE POEMS.

The Building of the Ship.....Longfellow
The Daffodils.....Wordsworth
The First Snow Fall.....Lowell
The Bell of Atri.....Longfellow
The Old Clock on the Stairs.....Longfellow

Also, all supplementary reading suggested in the outlines on history, nature study, geography, civil government, etc.

See suggestions and directions under Fifth Year.

SEVENTH YEAR.

Suitable Material: Sketch Book, Scott's Lady of the Lake (suitable for dramatizing), Stories of King Arthur's Court, Evangeline, Burrough's Birds and Bees, Holmes's Grandmother's Story of Bunker Hill, Courtship of Miles Standish, Snowbound, Great Stone Face, Lamb's Tales of Shakespeare, Captains Courageous.

Also, all supplementary reading suggested in the outlines on history, nature study, geography, civil government, etc.

Memory Selections: The Gettysburg Address, Warren's Address, Lines to a Waterfowl, The Heritage, The Psalm of Life, Blow Bugle Blow, The Last Leaf, How the Old Horse Won the Bet, Death of the Flowers, the Recessional, Chambered Nautilus, Old Ironsides.

The general purpose of reading in these grades is to create a keen appreciation for good literature and to strengthen individuality through the oral expression of that appreciation.

1. *The Physical Side of Reading.* Since voice and speech defects interfere with good oral expression, an attempt should be made to correct them. The most common of these are:

(*a*) A nasal quality.

(*b*) Huskiness.

(*c*) Lisping.

(*a*) May be cured by a few moments of vigorous drill, on words whose correct utterance demands a great deal of action of the lips; *e. g.*, bound, round, found, friend, thrusts, fists, posts, ghosts, etc.

(*b*) May be cured by working with relaxed throat on metrical selections.

(*c*) May be cured by noting carefully the position of the tongue in the formation of various sounds—especially the sounds of the letter *s*.

In all reading clear cut enunciation must be insisted upon. Some knowledge of the anatomy and physiology of the vocal organs should be given here.

2. *The Mental Side of Reading:* Oral reading is thought-getting and thought-giving from the printed page. It becomes effective only as the words read become rich in meaning to the reader. The printed word must call up a clear idea in the mind of the one reading and skillful questioning on the teacher's part, must discover whether it is the correct idea.

Good expression will be more surely attained if certain specific things are worked for. These should be:

1. *Life in Reading:* This comes from a mental arousing that manifests itself in the form of energy of voice. The literature read should be of a character to arouse the reader to a point of self-forgetfulness. Here self-consciousness is overcome. Selections full of interest must be used, especially those in which one central ideal dominates.

Thrilling incident, sprightly dialogue and vivid description will best develop life in reading.

2. *Smoothness in Reading:* Here the rough edges are worn off, and the life gained expresses itself in more beautiful form.

Selections that appeal to the higher emotions will secure best results here. One's love for the beautiful in literature will come to express itself in beauty of the voice.

3. *Directness in Reading:* This demands that the one reading shall in simple, direct earnestness, talk *to* and not *at* his hearers. This will correct all stilted and unnatural reading and will do much toward perfecting enunciation. The literature used here should be the drama or some powerful appeal. There is nothing better than Shakespeare's plays.

Additional Suggestions: If the reader stands out before the class, his mind and those of the listeners are stimulated to greater activity. He

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feels greater responsibility, grows in independence and unconsciousness of self, and is helped to realize that oral reading is thought-giving to a hearer.

Students should frequently hear good reading by the teacher or the very best reader in the class in order that the spirit of the same may leave its impression.

The teacher should keep several sets of the penny classics for class use, and distribute for the following purpose only: Sight reading, to cultivate agility of mind, rapid seizure of thought, and clear, intelligent rendering. These may be selections of minor importance, yet worth knowing, a single reading of which, "a touch and go" acquaintance with which, will suffice.

4. *The Humorous Side:* Let the teacher of reading not forget that our boys and girls need educating in humor; lacking it, they feed upon cheap smartness or questionable jest and their sense of fun partakes mainly of the practical joking that disgraces so many of higher educational institutions. So let them read and have read to them selections from Mark Twain, Holmes, Saxe, Hood, Stockton, Eugene Field, Artemus Ward, Warner, and James Whitcomb Riley. In term of three months two of the longer poems suggested can be read and studied, together with many lines and quotations from them memorized, and six or seven of the shorter selections together with three or four of them memorized. The memory work can be a part of the morning, or the Friday afternoon exercises.

EIGHTH YEAR.

Reading Selections: Lowell's Vision of Sir Launfal and Other Poems, Lincoln's Gettysburg Speech, Dickens' Christmas Carol, Burke's American Orations, Rolfe's Selections from English History in Prose and Verse, Shakespeare's Julius Cæsar, Shakespeare's Merchant of Venice, Webster's Bunker Hill Oration, the ancient Mariner, Man Without a Country, the Bell's, The Forest Hymn, Thanatopsis, Psalm XIX and XC.

Also, all supplementary reading suggested in the outlines on history, nature study, geography, civil government, etc.

For Suggestions, see Reading under Seventh Year.

Suggestions for teaching the Vision of Sir Launfal: The teacher of any selection of literature must be familiar with the selection she is to teach; she must know it in its bearings; she must have studied it earnestly and critically and then have thought out and planned how she can best present it to the class, so they can get the most out of it, toward the development of their characters in a broader sense; for no other study makes so great an emotional appeal and so enhances the worth and glory of life and living as reading.

The theme of this poem is charity—a universal theme. The foundation of charity is our feeling of kinship. What stronger bond than

blood kinship has existed in all the history of mankind! The idea of spiritual kinship has grown out of blood kinship. Charity or love is

"That thread of the all-sustaining beauty
Which runs through all and doth all unite."

The theme of Part I, except the last stanza, is selfishness, unconscious selfishness under the guise of a noble deed. Note the strong contrast. His own life was so bright, his heart could not be opened to the leper, sorrow and reverses must touch him and melt his selfishness. Unlike the bird, there was no song of sympathy in the heart of Sir Launfal, and like the castle he rebuffed the sunshine and the gloom apart, Sir Launfal gives alms only,—the gift of true charity must come from the heart. The Knight rode to do a noble deed but he could have found the Holy Grail at the castle gate had his heart gone with the gift. He was seeking the husk instead of the grain. The castle is the embodiment of Launfal and selfishness. It, too, was beseiged by the summer, but lay like an outpost of winter dull and gray.

In Part II we have the inner beauty of life set over against the external form. It requires the chilling influence of winter to awaken the soul of Sir Launfal to the realities of life to enable him to recognize his kinship to the leper.

The description of the little brook is as delightful as the June day, and pictures Sir Launfal's present life. The reader feels the joy of the fullness of the inner life independent of the external circumstances. If your pupils fail to see the universal truths here taught as good today as in the time of knighthood and as applicable to one individual as to another—they have lost the best in the poem.

Do not let the class leave the poem until they have stored their minds with the beautiful quotations. The memory of the June day description will bless and brighten and uplift them in after life.

OUTLINE.

1. Tell story of poem.

2. Look up source of poem in old legends; read something of mediæval life; read accounts of the Crusades, of Richard, the Lion Hearted; read Arthurian legends and Tennyson's Sir Galahad.

3. What is the connection in thought between the prelude and the rest of the poem? Apply to our growth of character the line in which the music is described as "beginning doubtfully and far away until nearer grows the theme." What connection do you see between this and Sir Launfal's youthful mistakes in feeling after the right way until he comes to a better understanding of life's purpose in later life?

4. Compare the first two lines of the second stanza with Wordsworth's Ode to Immortality. Does Lowell agree with Wordsworth?

5. Name the things in nature that the poet mentions in the second stanza as inspiring us to better lives and what does he say is the effect on each of us?

6. Explain meaning of the following expressions: "We Sinais climb," "At the Devil's booth are all things sold." And what things in life would you call "dross" and what "gold," and "bubbles," and "cap and bells"?

7. What sounds of nature are spoken of in the fourth stanza? What colors? What motion words in stanza 5?

PART I.

1. What lines in the stanza describing the castle show that Sir Launfal had lived such a life that he would not have much sympathy with a ragged, loathsome leper?

2. In our youth we expect only happiness and avoid the sight of sorrow. How does Sir Launfal show this trait?

3. Underline the words in stanza 6 of Part I that should be emphasized and tell why.

4. What is "The thread of all sustaining Beauty?"

PRELUDE TO PART II.

1. Mention all words in the first stanza that are descriptive of winter. In the same stanza, write out all architectural terms and show how they apply to the freezing over of a stream.

2. Mark the fine figures descriptive of an open fire in stanza 3.

3. Is any special wanderer meant in the second line of stanza 5? Who?

PART II.

1. Point out all figurative expressions in stanza 1 and explain their meaning.

2. How does the removal of the cross from Sir Launfal's surcoat show change in his character?

3. Judging from stanza 3, where has Sir Launfal been in search of the Holy Grail?

4. With whom is Sir Launfal comparing the leper in stanza 5?

5. What purpose do you think the poet had in using the word "denied" in line 5 of this stanza?

6. What two words are used in stanza 6 to show his change from pride to humility?

7. What in this stanza suggests the communion supper?

8. What in stanza 8 would make you guess the leper is the Christ?

9. The soul must climb upward by the path of self-sacrifice and forgetfulness of self to sympathy and helpfulness. How does this poem show that?

10. What do you think is the best life lesson to be found in this poem?

11. Which would you choose: the beauty and vigor and joyousness of youth as seen in this poem, or the old man, decrepit of body, sad with his weight of experience, but humble, sympathetic and useful? Give reasons for choosing either side.

12. Was the long unsuccessful journey really unsuccessful?

13. Could he have sympathized with the leper finally if he had not had the bitter experience he had? Was it worth while? Give reasons.

14. Plain unattractive duty near at hand is typefied by what in the story? High desire to accomplish some great and interesting thing by what?

15. Did the author make you forget that Sir Launfal was only dreaming? How did he do it?

16. Compare this story with Henry VanDykes's "Other Wise Man," with Hawthorne's "Great Stone Face," with the story of "The Widow's Mite," with the parable of the man who fell among the thieves on the road from Joppa to Jericho.

17. Memorize: Prelude to Part I, Stanza 6 of Part I, first three stanzas of prelude to Part II, from line 7 in stanza 3 of Part II, stanza 8 of Part II.

SUGGESTIONS FOR THE STUDY OF SHAKESPEARE'S JULIUS CÆSAR.

Before beginning the reading of the play, the teachers and pupils should come into close sympathy with the Roman life at the time of Julius Cæsar by studying the manner of living, the homes, social life, dress customs, and especially the government of the Roman people of Cæsar's time. The physical locations must be well understood—drawings may be made of the Roman Empire and of the city of Rome.

Suggestions: A careful reading of "The Story of Cæsar," and "Shakespeare's Julius Cæsar with Introduction and Notes Explanatory and Critical," and Lamb's "Tales of Shakespeare," would be excellent preparation. The teacher is advised to read also, if possible, the analysis of the funeral speeches of Brutus and Cassius, as given in Principles of Vocal Expression.

When reading the play, try to develop insight into the first essentials of dramatic writings; that is, that they deal with what men do under the stress of temptation, struggle, or opportunity. And so you can bring out the difference of the drama as compared with the epic poem, or novel or short story. After the reading of the play is commenced do not give the pupils so much reference work to do as to retard needlessly and lead to vexatious interruptions. Rather, if necessary, let the teacher give the information necessary to enable the child to grasp the significance of unknown allusions.

After the play has been read and studied appoint leaders from the class to prepare some scene or act from the play to be dramatized on Friday afternoon. These leaders are to choose the pupils from the class to take the parts of the different characters; to arrange the drills and practice, and to become responsible for the careful learning of the different parts.

If the class is large enough three or four leaders may be appointed, each being responsible for a scene.

In the hands of a skillful teacher this creates great enthusiasm and interest. Each leader will take pride in making the acting and dramatizing of his scene the best.

Do not leave the play without having the entire class commit to memory the most frequently used quotations and two or three of the orations, of which latter Mark Anthony's should be one.

WRITING.

Writing is taught chiefly for its utility. It is used to communicate knowledge to another, as well as to preserve it. Both of these require legibility. The rush of business and the economy of time demand rapidity.

While writing is not usually regarded as a culture subject, the learning of it may help to strengthen the mind. If it is taught with the higher aim in mind, the lower end is secured when the higher is attained. In learning to write the pupil must think. After much practice he does not think of the writing, but of what he expresses with the writing.

The teacher should see that the pupil does not practice bad forms in writing. The longer one practices wrong forms the more firmly do they become fixed.

See that the pupil takes an easy position. See that he is supplied, in the first grade, with good paper and a long lead pencil well sharpened. When he begins to use pen and ink, see that both are good.

In writing, aim at uniformity of slant rather than any particular degree of slant.

Before any one can make the letter *a* he must see it; *i. e.*, he must picture it in his mind. The first step in writing should be to fix the forms of the letters in the child's mind. There are many devices used for this purpose. After placing before the child a perfect form he may be asked to make it on his desk with a string or with pegs or with other objects. The teacher may make the letter with a pencil on manilla paper, and with a pin the pupil may make holes on the line far enough apart for ordinary stitches in sewing. Then with sewing cotton of some attractive color the pupil may sew the letter. The point in all this work for writing is that the pupil is thinking the form of the letter. He makes its acquaintance, as it were. He knows it at sight. He has also gained some power in making it. These letters should all be large that he may get a better idea of their form. But to write they must be made with some object that will mark. In writing the aim is to secure legibility and rapidity. If the pupil has "played" with these forms long enough legibility will come as soon as his hand executes what he sees. But it may be slow work. He may not execute with ease and grace. So some devices must be used to secure these elements. To help in this, pupils may be asked to make the letters "in the air" by moving the hand, as if making the capital stem, for example. He is greatly delighted when the teacher is able to name the form he makes. Blackboard practice with the free whole arm movement is also helpful. Tracing the forms of letters made on the board or on paper by the teacher is a good device. The child should know the forms of all the letters and *how* to make them at the end of the second year at farthest, and the rest of the drill can be given to an increase of skill and rapidity.

First Year.

Pupils should begin the script form of the letters, or words, at once upon entering shool.

The writing should be done on paper and with *long lead pencils well sharpened.* By the close of this year pupils should be able to write sentences so that they can be easily read. Pupils in the first year should be taught—

1. All the small letters.
2. The combination of small letters in words occurring in the lesson.
3. To write their own names.
4. To make the capitals which are used most frequently.
5. The proper height of letters, slant of lines and the turn.
6. To copy rapidly and accurately dictations.
7. To read writing.
8. To use Book No. 1.

Second Year.

In the second year pupils should review the work of the first year, and should be taught—

1. The elements and principles in small letters, single and connected, and the capital letters.
2. To write their lessons.
3. Make their writing legible, graceful and rapid.
4. To use book No. 2.

Third Year.

In the third year place larger stress on legibility. Make frequent tests in written work and grade on legibility. Keep the writing of each pupil in these tests, and make improvement the basis of the grades. Introduce letter-writing. Use Copy Book No. 3 and drills with practice paper.

Fourth Year.

Copy Book No. 4. See instructions in other grades. Use a great deal of practice paper, emphasizing movement and *legibility.*

Fifth Year.

Copy Book No. 5. Observe directions in previous years.

Sixth Year.

Copy Book No. 6. Observe directions in previous years.

In accordance with the recommendations of the report of the Committee of Fifteen, formal instruction in penmanship should be discontinued after the sixth grade.

SPELLING.

"I tell you earnestly, you must get into the habit of looking intensely at words, assuring yourself of their meaning, syllable by syllable, nay, letter by letter. * * *

"A well-educated gentleman may not know many languages, may not be able to speak any but his own, may have read very few books; but whatever language he knows, he knows precisely; whatever word he pronounces, he pronounces rightly.

"Let the accent of words be watched, and closely; let their meaning be watched more closely still."—*John Ruskin.*

The teaching of spelling has two objects: First. To teach the pupil the correct spelling of his own vocabulary. Second. To make the pupil familiar with the meaning and use of the words most frequently used by well-educated business or professional men, to add these words in as large a measure as possible to the pupil's vocabulary, and to teach him their correct spelling.

There is a wide diversity of opinion as to how spelling should be taught. Shall we use word lists prepared by the teacher or a carefully graded speller? Shall we teach spelling orally or shall all the words be written? Shall we teach phonics and diacritical marks? The following suggestions are offered for the consideration of teachers:

1. Language has two forms, oral and written. In both there should be systematic training.

2. The oral word appeals to the ear—(sound) *pronunciation.*

3. The written word appeals to the eye—(form) *letters in proper order.*

4. Correct pronounciation is as important as correct spelling. The large majority of people talk more than they write.

5. A word is a sign of an idea. Put meaning and life into the spelling lesson. Studiously avoid the old-time, parrot-like, meaningless, deadening recitation which brought this subject into disrepute in many localities.

6. Use such methods as will lead pupils to form the habit of carefully studying all new words as they come to them in their lessons. Spelling cannot be taught incidentally. It must have the systematic attention of the teacher as a separate subject and his constant care in all written work.

7. Whatever method is used, the pupils must form the habit of noting carefully every new word and fixing its form definitely in mind.

8. The teacher should endeavor to prevent rather than correct bad spelling. From the lowest grade to the highest every pupil should be taught never to spell a word when in doubt, but to consult either

the teacher or the dictionary. The eye must be trained. Correct spelling must become an eye and muscle habit. Constant drill in writing the *correct* form of a word is invaluable, but time must not be wasted in useless repetition of words which the pupils know and know well.

First Year.

The work in spelling for the first year is in connection with reading. During this year the pupil will meet few if any words, whose meaning he does not comprehend. There should be regular drill in phonics. Teach the consonants in this order: f, d, m, r, s (soft); h, w, n, p, t, b, v, y, l, z, and s (hard); k and c (hard); j and g (hard); sh, wh, ch, th (soft and hard), and g (hard). Teach the long and short vowel sounds. Arrange the words that contain the same combination of letters in groups, as fan, man, ran. Teach the combination of letters *a n;* such words as Dan, Nan, pan, can, will then be quickly recognized. When a number of these combinations are known, the letter analysis will give place to syllabic analysis, and a new word will be recognized by combining its syllables.

This power to master new words should be acquired during the first year.

Second Year.

The principal work for this year is learning the new words in the second reader. Pupils should pronounce these rapidly and correctly before reading. The pupil should master these word forms thoroughly. Additional words can be given from other work. The drill in phonics should include diphthongs, triphthongs and the more difficult consonant blendings and vowel sounds. Attention should be given to easy phonetic equivalents.

Dictation exercises employing words of the reading lesson, should be given daily. Pupils should use pen and ink. Gradually the words should be used in new connections. Pupils should be encouraged to make original sentences, illustrating the use and meaning of the words of their other lessons.

The syllable is the unit of pronounciation and careful attention should be given to the division of words into syllables. In this grade pronounciation of syllables in spelling is sometimes desirable. Pupils should learn to indicate the accented syllable.

Third and Fourth Years.

The third and fourth grades should recite together in spelling in those schools where the total number of recitations exceeds twenty. Spelling in connection with the regular reading lesson will be continued in each grade separately.

In the third grade a spelling book will be in the hands of the pupils and regular lessons assigned. It is true that the pupils may spend too much time in useless repetition. This results from a misconception of the function of the spelling book. This book is not intended merely for purposes of drill. The lists of words are not columns of

figures and are not to be taught as the multiplication table is taught. Every word has a meaning—most words several meanings. The pupil has now learned the form of most of the words familiar to him. Henceforth he must learn the *use and meaning of new words.* Every new word should become part of the child's working vocabulary. He ought not only to understand its meaning, when he sees it in print or when he hears it used by others, but he ought to become so familiar with it that he can use it intelligently. Before the pupil is asked to reproduce a word, he should have its form fixed in mind both through the ear and the eye. His very muscles should be trained to reproduce it unconsciously. To secure this result, mere repetition is worse than useless. It deadens the faculties of the child instead of developing them. Disgust takes the place of interest. Study of the use and meanings of words, however, never fails to secure the attention of pupils. Illustrative sentences should be given freely by both teacher and pupils. Dictation exercises are valuable if properly conducted.

Make lists of homonyms (or homophones). Study their meaning and pronounciation. Give dictation exercises, using these and similar words: Adds, adz; bad, bade; be, bee; beat, beet; blew, blue; bail, bale; bowl, boll; cent, scent; cellar, seller; dew, due; fair, fare; flea, flee; forth, fourth; flew, flue; him, hymn; hole, whole; hart, heart; hare, hair; heal, heel; hoes, hose; knead, need; knew, new, gnu; knot, not; leak, leek; limb, limn; mail, male; mite, might; miner, minor; mantle, mantel; nose, knows, noes; nay, neigh; pain, pane; pail, pale; pole, poll; rap, wrap; ring, wring; sun, son; slay, sleigh; some, sum; sew, sow, so, etc., etc. (See Illinois State Course of Study, or any graded speller for additional words.)

The systematic study of synonyms and antonyms should be a feature of the work of these grades. Make lists of words and require pupils to give words of like or opposite meaning. Be sure that the pupils understand the meaning and use of synonymous words, but close discrimination is not possible in these grades.

"Word building" is an exceedingly profitable as well as interesting exercise. Pupils of these grades will surprise many a teacher by their cleverness in the use of prefixes and suffixes. The pupils should understand the meaning of these affixes. Exercises in "word building" in the third and fourth grades prepare the way for word analysis in the fifth and sixth grades. Study the following affixes: er, less, ly, ness, ous, dom, mis, ness, en, ful, some, ment, or fy. Note changes of spelling due to use of suffix, such as changes from y to i, (plenty, plentiful); the doubling of the final consonant, (rob, robber); dropping of the final e, (move, moving).

Diacritical marking should be mastered in these grades. Primarily and above all else, study the *use* and *meaning* of words.

Fifth and Sixth Years.

The fifth and sixth grade pupils should recite together in spelling in all schools in which there are more than twenty classes daily.

Before completing the work of the first four grades, a pupil should have mastered the spelling of the words in his vocabulary; learned the use and meaning of many new words from the speller; given considerable attention to homonyms, antonyms and synonyms; become familiar with the use of diacritical marks. Heretofore he has relied largely on the teacher for explanation and definition of new words with incidental use of the dictionary. He is now mature enough to depend more upon his own resources. Henceforth he should use the dictionary systematically and intelligently. Every pupil should have a small desk copy, but he should be encouraged to consult freely the larger dictionary on the teacher's desk. The "dictionary habit" is largely formed in these grades. Every reference to a dictionary should be made with a view of grasping the full significance of a word and never with sole reference to preparation of a single day's recitation. Otherwise the reference must be made repeatedly. The pupils should keep a list of these words and review them from time to time.

In addition to the regular lesson from the spelling book, with constant attention to the *use* and *meaning* of every word, the pupils should be able to pronounce and spell all the technical and difficult words in other lessons,—grammar, arithmetic, etc. The time to fix a word in memory is the time when it is first met.

Continue the study of homonyms. Study the pronunciation, spelling and correct use of such words as the following: right, rite, wright, write; rough, ruff; seam, seem; roe, row; rowed, road, rode; root, route; soar, sore; straight, strait; aught, ought; aisle, isle; air, e'er, heir, ere; berry, bury; berth, birth; core, corps; cede, seed; none, nun; oar, ore, o'er; ode, owed; plain, plane; raise, rays, raze; scene, seen, seine; sole, soul; cite, sight, site; cord, chord; fain, fane, feign; capital, capitol; currant, current; gamble, gambol; liar, lyre, etc. (For other words see Illinois Course of Study). Take fifteen or twenty of these words a month.

Continue the study of synonyms, requiring pupils to note some of the more obvious shades of meaning between words nearly synonymous. Amongst others study the following: fame, glory, distinction, honor, notoriety, reputation; expense, cost; liberty, emancipation, independence; science, art, knowledge; discover, invent; vexation, mortification, chagrin; idle, indolent, lazy. However, the emphasis in these grades should be placed upon finding words that express practically the same meaning and not upon ferreting out the subtler distinctions between such words.

Word analysis in these grades should supplement "word building," begun in the third grade. The study of roots should not be extensively undertaken before the seventh and eighth grades. Take a word, as de-scrip-tion. What does the prefix mean? What does the suffix mean? What does the entire word mean? Another word, as post-pone-ment. Note the prefix and the suffix. Pupils should understand the meaning of such prefixes as ad, ambi, ante, cata, circum,

contra, ex, in, inter, para, poly, post, pro, re, semi, sine, sub, syn, ultra, un, and with such suffixes ar, able, aceous, acy, age, ance, ant or ent, cule, dome, ee, eer, ence, escence, ette, ic, ing, ism, kin, ling, ment, ness, ory, tion, ule, ure, y, hood.

Write abbreviations of months, days, titles applied to persons, states, arithmetical and geographical abbreviations, etc.; also a list of common contractions and give words for which they stand.

Seventh and Eighth Years.

The work of these years should be given together. The regular spelling lessons and the learning of technical or difficult words in all other lessons are to be continued. Waste no time in trying to learn to spell any word, whose *use* and *meaning* are not comprehended. This is fundamental and vital. It is recommended as part of the regular work of these grades that the teacher require her pupils to keep a list of misspelled words in a note book and that these words be reviewd from time to time as opportunity offers. By this method each pupil is shown his own mistakes; he has a special list of such words as he has missed; he learns to spell through the eye; the teacher ascertains exactly the kind of work being done by each pupil; it affords an excellent opportunity for teachers to use the highest incentive in their efforts to secure good results.

The study of synonyms should be continued, giving increasing attention to the nicer distinctions in the use of these words. Some one has said that there are only two words in the English language that are always and exactly synonymous, begin and commence; in other words, commonly known as synonyms, there is a basis of meaning common to all words, but each word has a significance peculiar to itself. Elegant English demands exquisite precision in the choice of words. Study such groups of words as conceal, disguise, dissemble, secrete; content, satisfied; clumsy, awkward, uncouth; error, mistake and blunder; courage, bravery, gallantry, intrepidity, fortitude, heroism; abstinance, temperance; calamity, disaster, misfortune, mishap; account, narrative, description; cautious, wary, circumspect; speech, address, oration, harangue, declamation; final, ultimate, conclusive; beautiful, pretty, handsome; habit, custom; education, instruction; economy, frugality, parsimony; order, command, direction; odd, singular, strange, peculiar, eccentric, erratic; history, biography, memoirs, etc.

Word building and word analysis should be continued and combined with a careful study of *root* words. This work is fascinating and profitable. A fair idea of Roman customs and conditions will be secured by a student who knows the full significance of such words as conspiracy, plebeian, candidate, subjugate, submit, emancipate, consul, civilization, corporation, legislate, tenant, pedagogue, etc. This study of Greek and Latin roots should be carried on systematically. Take one root each week and compile lists of words derived therefrom. Study both the literal and metaphorical meaning. Note

the force of all affixes. The following roots are suggested: am (love); ann (year; ag (do, drive); aud (hear); animus (mind); bonus (good); bene (well); cap (head); carn (flesh); cap (take); cor (heart); clud (shut); cred (believe); civ (citizen); corpus (body); dict (say); dignus (worthy); duc (lead); doct (teach); fact (to make); fin (end); frang (break); hom (man); jac (throw); locut (speak); man (hand); mit (send); nom (name); pon (place); ped (foot); reg (rule); script (write); tract (draw); temp (time); terr (earth); ven (come); vert (turn); vid (see). Greek roots: auto (self); chron (time); ge (earth); graph (write); log (speech); meter (measure); phil (love); phon (sound); poli (city).

Write lists of words to illustrate the following rules: "The letters f and l, at the end of monosyllables and standing immediately after a single vowel, are generally doubled." Note exceptions: "A consonant standing at the end of a word immediately after a diphthong or double vowel is rarely doubled." "E final is silent when preceded by another vowel in the same syllable." "C is silent before k in the same syllable." "Silent final e is retained when a suffix beginning with a consonant is added." Note exceptions.

Make lists of words frequently mispronounced and drill on the correct pronunciation of these words once a week. About ten lists of twenty-five words each should be made and used in succession. The following words are suggested for one list: Again, algebra, aunt, been, bouquet, Asia, address, exquisite, courier, comrade, deaf, err, poem, inquiry, launch, hearth, kettle, extra, lief, hostile, zoology, romance, salmon, pretty, patron.

At convenient intervals during these two years review diacritical markings; the elementary sounds; interesting facts about the history of our alphabet; division of letters into capitals and lower case; size of letters used in printing; use of hyphen in compound words; classification of words on basis of number of syllables; use of silent letters.

In conclusion every teacher should remember that the work in spelling has in view the attainment of three results:

1. Habitually correct spelling.
2. Correct pronunciation.
3. Correct *use and meaning* of words.

LANGUAGE, COMPOSITION AND GRAMMAR.

LANGUAGE LESSONS.

AIMS.

First: To secure facility in the correct use of language—oral or written.

Second: To secure skill in the mechanical construction of written language—spelling, capitals, punctuation, etc.

METHODS AND MATERIALS.

No schedule can give the vocabulary to be acquired in each grade nor determine the degree of facility with which such a vocabulary should be used.

It can only be said that as the pupil's stock of facts and ideas grows through his study of other subjects, so his vocabulary and the ability to use it in expressing these facts and ideas should grow through the language lessons.

Further as there is progression in attainment both of knowledge and thought, so there should be progression in the character of the language exercises. This is shown in the outline given later.

In teaching the use of capitals and punctuation marks, teach that which the pupil's work demands. As a standard to which the class as a whole should measure up, use the following schedule:

First Grade.

First Half-Year: See that all sentences copied are mechanically correct in spelling, the use of capitals and punctuation marks.

Second Half-Year: Continue copying sentences. Teach pupils to write their name, town, father's name (Mr.), mother's name (Mrs.), teacher's name.

Second Grade.

First Half-Year: Use of capitals to begin statements, questions, first word of each line of poetry.

Use of period after an abbreviation and at the close of a statement. Use of interrogation mark after a question.

Use of common abbreviations: Mr., Mrs., St. Teach in connection with the number work use of in., ft., yd., pt., qt., gal.

All common errors in speech should have been corrected. Special emphasis may now be laid on the correct use of *is* and *are*, *was* and *were*.

Second Half-Year: Use of capitals to begin names of persons, initials, days of week, names of months.

Use of exclamation point.

Use of abbreviations occurring in the number work.

Third Grade.

First Half-Year: Continue the drill on the use of punctuation marks, capitals, and abbreviations outlined for preceding grades.

Correct the errors of speech most frequently made by the class.

Second Half-Year: The work of the preceding grades will be studied in a more formal way. A pupil completing this grade should use capitals correctly to begin all sentences, proper names, initials, names of months and days of week. He should use a period after an abbreviation and a statement, an interrogation mark after a question, and an exclamation point after an exclamation. He should be familiar with the most used abbreviations, Mr., Mrs., St., names of months and days of week, and terms taught in the number work. He should make no mistake in the use of *is* and *are*, *was* and *were*, *did* and *done*, *saw* and *seen*.

Fourth Grade.

First Half-Year: Follow the course outlined by the elementary language book. Insist on the correct use of *I* and *me* as subject and object, and the use of the nominative form of the pronoun after *is* and *was*.

In letter writing, drill on the addressing of the envelope, the heading and closing of the letter.

Second Half-Year: Continue the use of the elementary language book.

Insist on the correct use of the past tense and perfect participle of common verbs: begin, come, do, eat, give, go, see, sing. Use correctly set, sit, lay, lie, learn, teach.

Continue the drill on the written forms of letter writing. A large percentage of pupils leave school at the end of this year; they should be perfect in the forms of letter writing.

Fifth Grade.

Review the language work of preceding grades. By the aid of the exercises given in following outline train the pupil's imagination, enlarge his vocabulary, drill on the choice of words, and confirm him in the right use of capitals, punctuation marks, and paragraphing.

OUTLINE.

- Oral Work.
  - Stories.
  - Picture Lessons.
- Written Work.
  - Picture Lessons.
    - Language-Lesson Pictures.
    - Geography Pictures.
    - History Pictures.
    - Biography Pictures.
    - Dialogue Pictures.
  - Stories.
    - For Reproduction.
    - For Combination of Language Lesson and Spelling Lesson.
  - Dictation as a Language Exercise.
  - Quotations, or Memory Gems.
  - Figurative Language Exercises.
  - Paraphrasing Exercises.
  - Synonym Exercises with a Selection for Study in Reading.
  - Fables and their Application.
  - Proverbs and their Application.
  - Action Lessons, Doing and Telling How.

THE SUPPLEMENTARY WORK OF THE TEACHER.

Some of this work has been compiled from sources of the highest authority in artistic teaching; some has never been presented before, but all of it is in actual and satisfactory use in many of the schools of our State.

The text-book is only a book of texts upon which the teacher is to build, by supplementary work, an ideal and properly developed series of incidental results. Incidental results are most lasting in educational work. The unconscious tuition of life and school is the best. The teacher whose ideal is highest and whose art is most perfect values least the direct results of her teaching. A good and suggestive text-book is very necessary for the teacher's orderly, logical, and consecutive presentation of any given branch of study; but it is the supplementary work in that branch that gives tone, fibre, and value to the developing educational processes of mind and character.

ORAL WORK.

Language is used in two ways—orally and in writing. A thousand words are used orally to one used in writing.

The training of pupils in the use of oral language should begin, of course, in the first year grade, and should be systematic, progressive, and continuous throughout all the grades in our schools.

Language is an expression of thought; consequently, *thinking must* precede talking or writing.

1. STORIES.

Pupils will learn to use language well by using it under such circumstances as will most likely fix the habit of speaking or writing

correctly. As they like stories, it will be well to adopt story-telling as one of the devices for teaching language.

Stories, however, should be carefully selected. With the youngest pupils, the story should be short, but it should be attractive. Some fables and some fairy stories are very useful with the youngest pupils. The story should be adapted, of course, to the age of the pupil and to his ability to comprehend its details. Some of the stories, at least, should be of such a character as will assist in the moral instruction of the pupils. A lesson in ethics, conveyed through the medium of a story, is more likely to touch the sensibilities of a child than the same instruction conveyed in any other form.

With older pupils, the stories may be selected from history, biography, books of travel, etc.; thus incidentally helping forward other work of the school, and at the same time giving variety to the language work.

Assuming that proper selections have been made, and that the teacher has a large and choice collection on hand, the work may go on somewhat as follows:

Read the story to the pupils; or, better, tell it to them in a familiar way. Every teacher should cultivate the power of telling a story well. Question the pupils carefully on all its details until they are fully understood, as right thinking should always precede talking. Then call on the pupils to tell the story. One pupil may make a beginning, another carry it a short stage, and a third may take up the thread where it has been dropped.

In this way the interest of all can be held throughout the exercise, and a proper arrangement of the story can be secured.

Criticism should be dealt out sparingly. A few pupils can endure severe criticism, and their errors in language may be corrected at once. Others are more sensitive, and criticism of their work should be made at the close of their recitation. Most pupils need encouragement, and every honest effort should be commended.

These oral exercises should be short, not exceeding ten or fifteen minutes. Such exercises, however, should be frequent; if possible, daily, as is done by the grade teachers in large schools.

You need have no apprehensions about keeping up interest on account of telling and re-telling the stories many times to the pupils in the grade. An old story, if good and well-chosen, seems to have peculiar and growing charms for a child.

The same story should not be told, however, after the language becomes formal, or "bookish," this being a sign that the "danger point" has been reached.

After a good beginning has been made, one *new* story of moderate length for each two or three weeks of a school term is all that may be needed.

It is not necessary, however, to confine the oral work to story-telling. The reading lesson furnishes one of the best means for this

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purpose. If the lesson is a new one, it will be well to require the pupils to prepare it so that a fair outline can be given by them before the reading exercise begins. It is well, also, after the reading of each paragraph or stanza, to require some one to give in his own words the substance of the matter read. This is not only a good exercise in language, but it compels each pupil to give individual attention to the reading lesson so that he may gather the thought expressed. In other words, reading becomes an exercise in which the pupils learn to seek for ideas conveyed by words on a printed page.

Oral language work should not be confined, however, to the first and second grades. For the third, fourth, and fifth grades, topical recitations in geography and history will give variety to the language work. Indeed, every recitation gives the teacher an opportunity for requiring good oral work in language.

The teacher must constantly hold in mind that only clear and well-arranged thought can be clothed in good language. If the ideas of the pupil are confused or incomplete, the attempt to clothe ideas in language will inevitably result in confusion or incompleteness. The teacher, therefore, in geography or history, should make sure that the pupils have received clear impressions of the subject under consideration before calling upon them for what we term a topical recitation. Let "question and answer" precede, under such circumstances, the topical recitation, until the teacher is convinced that the pupils are prepared for connected statements.

2. Picture Lessons.

Every teacher should gather quite a large stock of pictures suitable for oral language lessons, for written language lessons, for geography, history, biography, etc., language work. These pictures may be selected from school periodicals, book catalogues, and the numerous illustrated papers or magazines. In this work the pupils will cheerfully aid and bring to the school many suitable pictures, both large and small.

The proper plan is to keep the smallest language pictures unmounted so that they may be pasted on the top part of a cap paper sheet when needed for written work. The others ought to be well mounted, preferably on cardboard or pasteboard. This is work which, though tedious at the time, really pays, as the pictures thus mounted will last for years.

It is well to have the mounted pictures numbered on the back and these numbers entered in a blank-book, with the title of each picture, under each proper division of oral and written language lessons, geography, history, biography, etc., language work. Thus a catalogue is made and the teacher is sure of his stock of pictures.

For oral work in the first and second grades one large mounted picture should be used for the entire grade or division. For written

work in the grades above these, each pupil may have a picture or all may work from the same picture found in the geography or history.

The first lesson is one of *Description*, in which the imagination is to have no part. The perceptive faculty is to be trained, and the question to be answered is, "What do you see in this picture?" or "What does this picture represent?" They must first be taught to *see*, then to express their thoughts in a connected order.

The same pictures may now serve as the basis for a lesson on *Narration*. The pupils are asked to tell a little story about the people in the picture.

They are to think of names for the persons, etc., in the picture, and tell where they are and what they are doing.

In order to train the younger pupils, in oral language work, into habits of right *seeing*, and to express their thoughts in a connected way, it will be found necessary to question the *seeing* into them in the order of the importance of the character of individuals and objects, *e. g.*,

QUESTIONS.

What is the chief or most important figure in this picture?
What is the appearance of the lady? How is she dressed?
Does the picture show anyone else?
Describe the dog, or horse, so that I would understand you even if I had not seen the picture.
What is the scene represented by the picture, or, what place is shown us in the picture?
Shut your eyes, and see the picture in your mind just as you have described it. Now who is willing to describe the picture to me, without the aid of any classmate, as a continued story? (Hands. If the attempt is made cheerfully, it will aid greatly in the struggle.)

B. WRITTEN WORK.

During the first and second grades, the language training should be principally oral. When the pupil reaches the third grade, however, he should be able to write with a fair degree of skill.

Assuming that the pupils of a grade have this skill, the work in language may become more varied. The oral exercises may be carried on as before, but should be accompanied by written exercises. The time given to language on any one day, however, should not be divided between oral and written work.

When the writing is finished, a few of the slates or papers may be read, a few hints or suggestions may be made, and such commendation given as the results will warrant. A few exercises carefully corrected *with* the grade will no more toward eradicating faults than a much larger number examined by the teacher alone.

This part of the exercise should seldom continue longer than ten minutes, and ten minutes given to such work every day will undoubtedly accomplish more than the *hours* usually given by teachers to the examination and correction of papers and slates.

The papers and slates should, however, always be examined by the teacher, not so much for the purpose of correcting them, but for the purpose of noting the general faults and weakness of the grade, and the special faults and weakness of its members.

1. Picture Lessons.

For written work, the same general directions for the use of the picture already given for oral work should be observed. First, the *description*, for the training of the perceptive faculty, or the power to see and observe correctly. Second, the *narration*, for the training of the imagination, and for the power to draw inferences in the order of their importance.

(1) *Geography Pictures.*—A geography picture may be used first as a geography lesson; afterwards, the geographical knowledge may form the basis for the written exercise.

It is important that the pupils be taught to outline the order to be followed in the work. If the picture, for example, be a typical one of life in some country, the outline might run somewhat as follows:

(a) Situation of country.
(b) Description of country.
(c) Inhabitants: as to description, dress, occupations, possessions, dwellings, etc.
(d) Scene in the picture: persons, animals, etc.

(2) *History Pictures.*—Pictures representing historical subjects are very useful when used for written work in language lessons. They are especially valuable as review lessons. Pictures showing the costumes and customs of the period studied, are great aids in the history work.

(3) *Biography Pictures.*—The teacher must collect every year a large stock of pictures suitable for biography language work. The pupils may work from large pictures; but for special work, a small picture pasted on the top part of a cap paper sheet may be used. The biography language work is especially useful in connection with the "quotations" and other work of the school along the line of good literature and reading.

(4) *Dialogue Pictures.*—A picture showing a number of people is a very interesting text from which to write a dialogue. The writing of this style of language work teaches the pupils to give short, concise sentences; and it gives them an opportunity to cultivate the *conversational* powers. But the chief aim is to train the imagination, and to develop *dramatic* power.

The pupils are to be taught the meaning of "Scene" and "Characters," also how to write and arrange the conversation. When the names of the characters are given it is not necessary to use quotation marks before or after the sentences. It would be well, at first, for the teacher to write a short dialogue on the black-board showing the desired arrangement; this the pupils copy before proceeding to original work.

In this work, however, the pupils should be finally trained to construct dialogues without the aid of pictures. The teacher should be-

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In this work, however, the pupils should be finally trained to construct dialogues without the aid of pictures. The teacher should be-

gin by *assigning* the scene and characters, and suggest the line of work, allowing the pupils to select a suitable title.

This is more difficult than picture *dialogues*, as the incidents or plot are left to the imagination of the pupils, aided only by the suggestions of the teacher. Stage directions may be given. If a particularly bright dialogue is written, it may be learned and recited on a Friday afternoon, the author being allowed to select those who are to take part.

In the higher grades, the selection of title, scene, and characters may be left entirely in the hands of the pupils, thus making the work original in every detail. A teacher of long and varied experience suggests that personal remarks, or stories at the expense of classmates should be strictly forbidden.

2. Stories.

For written work, the same general direction already given for oral work, as to length and character of story, may be observed.

(1) *Stories for Reproduction.*—Stories for reproduction should be short, simple, and direct; otherwise the pupils will be unable to grasp thought to express in their own words.

Before reading the story to the pupils, see that every one is in the attitude of attention. One of the important objects in view in giving these exercises is to train pupils in the *habit of attention*, to cultivate the power to hear what is said *as* it is said. Hence it is better to select something easily remembered, and to read but once.

Require truth-telling throughout the exercise. The expression may be the pupil's own, but the thought must be that of the original story. It is an important thing to be able to repeat a thing told us without altering its meaning. A helpful exercise in training pupils to listen well, is that in which the teacher reads a short sentence and requores the pupil to repeat it verbatim. The sentences may be maxims, proverbs, lines of poetry, or be chosen from some paragraph.

If the pupils are not accustomed to these exercises, draw the story from them at first by a series of questions. Commend those who give the entire thought without question. They will soon be able to reproduce the story without such help.

With pupils in the primary grades, oral reproduction should come before the written. See that the pupils can tell the story well before you ask them to write. The written work involves all that is included in the oral recitation, with the addition of the mechanical execution, which demands care and practice. "Proceed from the simple to the more difficult."

Let some of the selections for written reproductin be in verse. These should come after practice in prose.

Keep a scrap-book where you can collect newspaper items, anecdotes, etc., suited to your language lessons. Be judicious, however, in selection.

It is seldom convenient for the teacher to correct all the exercises of the pupils though it is well to do it occasionally. A good plan is to correct one or two, with the help of the pupils, illustrating on the black-board. The errors will be found to be in the same line, so that this method is quite as helpful as individual corrections, while it makes it possible to have these lessons more frequently.

Keep a few main points in view while correcting. Use of capitals, punctuation, and the omission of unnecessary "ands" come first. If the early criticisms are confined to these, they will be more effective than if they cover more ground.

Have new or difficult words occurring in the story, written on the blackboard for reference; for it is better for the pupils to copy correct forms than to invent incorrect ones.

(2) *Stories for Combination of Language-Lesson and Spelling Lesson.*—In the ordinary written exercises, pupils use comparatively few words, and these are the words of their ordinary conversation. There are, however, many other words that are readily understood by the pupils when they are heard in conversation or seen in the books which they read. But such words are not sufficiently familiar to be used in conversation or in written work.

The object should be to constantly enlarge the spoken and written vocabulary of the pupils. This can be effectively done by exercises in stories constructed by the pupil upon the plan of this combination work.

The teacher should write upon the blackboard a list of words in accord with the nature of a story and the object set forth above. The written story must contain every word in the list.

This performance, in addition to the spelling, and enlarging the spelling and writing vocabulary of the pupil, exercises such powers of his mind as imagination, judgment, discrimination, and taste. It stands out in contrast with the slight value to be derived by the pupil in the assignment of a topic to be hunted up in books, when, after reading himself full, he is to sit down and try to empty what he has gathered upon paper. Such a performance is simply a memory effort to reproduce what he has read, or else a poor paraphrasing of the authors he has dipped into.

3. Dictation.

The dictation exercise is one of the most important helps in teaching language. Few teachers fully appreciate its value. Any kind of training or exercise to be valuable must key the mind to a high degree of tension. Dictation exercises, when properly conducted, will serve this purpose, and should occupy a large portion of the time given to written language work.

For all grades the exercises should be short, and for the lower grades especially should this be the case. A good plan, when the exercise embraces only thirty or forty words, is for the teacher to write it carefully upon the blackboard *before school.* Sufficient time

should be given for the study of this exercise by the pupils for whom it has been prepared. Capital letters, spelling, punctuation-marks, etc., should receive the attention which their importance demands. Then the exercise on the blackboard is covered with the draw-curtain, and the teacher dictates it to the pupils as they write it upon their slates or tablets. This done, the teacher uncovers the exercise on the blackboard that the pupils may see it written correctly. Each one examines his own slate and reports his errors to the teacher, who stands at the blackboard and furnishes whatever explanation is required. For five or six minutes every pupil will be interested in the work, and will be benefited *in proportion to his interest.* After the slates or tablets have been examined in this way, the exercise on the blackboard may be required to be written again from dictation.

Another very valuable plan for conducting the exercise is for the teacher to read a paragraph from one of the reading books used in the school, and from a selection with which the pupils are already familiar. Now the teacher reads it a second time, a sentence or a piece of a sentence at a time. The pupils, having slate and pencil, or pencil and tablet, write as the teacher dictates. They have been instructed to use their judgment in regard to capitals, punctuation, quotations, etc. When the paragraph is thus dictated, then each pupil takes his book and corrects his mistakes from it.

Dictation involves a great deal in exercising so many of the pupils' mental powers. The senses that are brought into play are hearing, sight, the movement of the hand; while attention, observation, memory, imagination, judgment, reason, and will are all actively engaged. The hand is trained to keep up with the memory in expressing the ideas as they flow through the mind, the ear must catch each sound, while the memory keeps them in place ready for use as the fingers jot them down; the imagination, judgment, and reason are all vigorously at work deciding where one sentence begins and another ends, while the will holds the mind to the subject in hand.

Dictation exercises show connected or related sentences, and the careful attention the pupil is obliged to give to this class of work begets in him the very habit that is so necessary to his future progress in written language. To read to pupils a sentence or part of a sentence at a time, the writer must think how he will write it, and then the act of comparing his own effort with the work from which the extract was read, forces him into the habit of seeing the logical connection of sentences, and this passes over into the habit of logical thinking and logical writing. Spelling, punctuation, a taste and feeling for all the elements involved in good literary composition, and without which no good writing is possible, all force themselves into and become a part of the mental fibre of the pupil. Much practice in this kind of composition will give the pupil a correct idea of what good writing is, and thus almost imperceptibly a good style is acquired.

Dictation exercises are not designed, of course, to supersede entirely what is called original composition, or other formal language work. They will always lack the stimulus of original thought. They are especially helpful, however, in preparing the pupil for the mechanical work of composition, and should never be neglected.

A STUDY OF THE MENTAL OPERATIONS OF THE PUPIL INVOLVED IN DICTATION AS A LANGUAGE EXERCISE.

I.

1. Sense perception through hearing and sight.
2. Revival of images and concepts previously associated with the separate and individual words dictated.
3. Ideas received through sense percepts, and these ideas held in relations (thoughts) in the process of combining dictated words into sentences.
4. Judgment exercised in the process of reasoning as to where one sentence begins and another ends.

II.

Conclusions from the study of items 1, 2, 3, and 4 of above:

1. The mental operations involved are complex and many-sided.
2. Attention is active in getting and keeping in memory sense perceptions; and the imagination, in observing their proper relations in the order of thought as the fingers jot them down.
3. The judgment and reason are active in the determining processes of combining words into sentences, and sentences into paragraphs.
4. The will is active in holding the mental operations involved in proper balance for the performance of the subject in hand.
5. The sensibilities will be active in proportion to the ideal relation of sympathetic harmony between teacher and pupils, and the wisdom exercised in the selection of the dictation lesson.

4. Quotations, or Memory Gems.

Let the quotation for the day be written upon the blackboard before school, to be read aloud by the pupils after the morning exercises. Give a short time to the study of the selection. If necessary, speak of the author, the meaning of the lines, and any figure of speech that may occur in them. Do not preach to the pupils, however; but let the quotation of itself sink into the consciousness of the learner, and bear its message and fruit in proper season.

Encourage older pupils to copy the quotations, as well as to commit them to memory. This will stimulate them to add selections found in their own reading. Let them find quotations for the school occasionally. They will doubly appreciate a good thought which they have found for themselves, and handed on for the benefit of others.

Use the quotations frequently, to fix them in the minds of the pupils. Their value to them is in the future as well as the present good resulting from them; repetition will make memory more cer-

tain. If any fail at an attempt to repeat, do not affix a penalty; for such thoughts are not most helpful when associated in memory with punishment.

It is well for pupils to learn a standard poem occasionally, instead of detached quotations.

Some poems well adapted to concert recitation are:

Barefoot Boy, and selections from Snow Bound, by Whittier.

Planting of the Apple Tree, Lines to a Water Fowl, The Fringed Gentian, by Bryant.

Psalm of Life, The Builders, Ladder of St. Augustine, The Children's Hour, by Longfellow.

The Chambered Nautilus, by O. W. Holmes.

Each and All, The Mountain and the Squirrel, by Emerson.

Step by Step, by Holland.

One by One, Maximus, by Adelaide Proctor.

These are only suggestive, and must be extended, of course, by the teacher.

In the higher grades, devote a school term occasionally to the study of some one poet. Let the quotations be chosen from his writings, and some of the supplementary reading as well. Talk of his life, home, friends. Make him seem a reality, not a myth, to the pupils.

5. Figurative Language.

Figurative language can be made one of the most pleasing and attractive exercises in language work, and may be taught incidentally in the fifth and sixth grades in connection with grammar. The teacher should use it as one of the means of interesting pupils in their lessons by developing the imagination, and in order to lead them to see and feel the beauty of the figurative language that abounds in prose and poetry.

They need not be told that they are going to learn comparison, simile, metaphor, personification, etc.; just teach them when giving composition exercises and grammatical forms, by:

(1) Select a number of adjectives, as brave, timid, busy, comical, patient, fierce, dumb, agile, strong. Add, in another list, soldier, hare, bee, monkey, tiger, ox, squirrel, lion. Apply the adjectives to the people and make comparisons with animals, *e. g.*, The soldiers were as brave as lions.

(2) Write a number of selections like these on the blackboard: Sharp knife, sharp tongue; foot of the child, foot of the mountain; crown of the king, crown of the tree; wings of the swallow, wings of the morning; the source of the river, the source of joy. Let the class write: (a) the literal forms, (b) those that are figurative, (c) then make sentences containing forms of speech.

(3) Ask questions like these: What flower is the symbol of purity? of modesty? of beauty? What tree is the symbol of strength? of grief? of peace? What season is compared to childhood? to old age? Make oral sentences, lead the class to see the relation between

the symbol and the object, and give a reason for their decision in sentences written in class on the blackboard.

(4) Explain what such phrases as, waving grass, moaning pines, blinding lightning, glistening dewdrops, floating clouds, refreshing showers, growing plants, etc., mean; and have pupils use them in descriptive composition, *adapted* to their age and development.

(5) Change figurative language into literal as: His locks shone *silver-white;* Fifty *sail* left the harbor; The whole human race is mortal; A hundred willing feet answered the call; I shall never cross his threshold again; The singing of the birds resounded from the trees.

(6) Use proverbs for the sake of variety, and to arouse interest by having pupils use them in conversation and on paper. Begin with familiar ones, as: Many hands make light work; Willing hearts make swift feet; Diligence is the mother of good fortune; A bird in the hand is worth two in the bush.

(7) Discuss orally such sentences as these: He had a heavy heart; Her heart is not in her work; Do not set your heart on worldly things; We should learn some things by heart; Harden not your heart against the unfortunate. Let the pupils use these expressions in writing, always giving a reason for using this or that form.

(8) Again, take the words that have various meanings in common use: head, eye, tooth, ears, tongue, as: Give the horse his head; Don't lose your head when danger arises; I can make neither head nor tail of it; The boy's head is turned; It is hard to make head against the stream. After oral discussions, let pupils apply them to the same person or thing in writing.

(9) Let pupils select figurative language from their quotations, memorized poems, and reading lessons.

(10) Teachers can give appropriate selections applicable to history, geography, or elementary cience classes.

The New Testament, Shakespeare, Childe Harold, Emerson, and all the poets contain numberless passages suitable for this grade work, as well as for the more advanced.

6. Paraphrasing Exercises.

In the lower grades, much supplementary work has been done by the pupils in giving the life history of some living thing, (children are more interested in animal life than plant life,) as that of a bee, an ant, a squirrel, etc. Thus the pupil has been brought into sympathy with these animals through a knowledge of their homes, their troubles, their enemies, etc. The pupils have written something about the animal selected, beginning somewhat as follows: I am a little squirrel. My mother and I live just behind a wood-pile in Mr. Jones' wood. Our home is lined with, etc.

In the higher grades, it will be found that the most satisfactory work in *paraphrasing* can be accomplished through this same idea of personality. Take, for example, "The Wreck of the Hesperus,"

by Longfellow. The pupils study and read the poem in class, and then paraphrase. Tell them to imagine that *they* are on the light-house at Norman's Woe, and write a friend giving an account of the terrible storm in which the Hesperus, with all on board, went down on the rocks. Allow sufficient play for the imagination, yet insist upon holding to the truth.

Other poems that can be used, are "Paul Revere," with the pupil as Paul; parts of "Hiawatha" and "Evangeline," many historical poems, etc.

Another way to vary this work is to let the pupils tell the story as though it were news brought by a post-rider to the village in which they live.

7. Synonym Exercises with a Selection for Study in Reading.

This work is most valuable for exercising and developing discrimination, judgment, (especially what Herbart terms the "æsthetic judgment,") taste, etc. It ought to begin in the fifth grade, but it is especially valuable for the grades above the fifth.

Do not use a book of synonyms, but let the pupils learn how to use and utilize this part of the dictionary in the study of words.

In the study of the selection, the teacher designates for this exercise the words for which an appropriate synonym is to be used. In the preparation of the lessons each day, the teacher may have each pupil copy a stanza or paragraph, using synonyms for the words which are designated by some mark, as a star.

As a review lesson in spelling, and the use of synonyms, pronounce the words marked with stars for pupils to write in a column; and, being allowed a free use of the dictionary, then write synonyms, in a second column, thus:

1. nature	creation, universe
2. holds	sustains, carries on, continues
3. communion	converse, intercourse
4. visible	perceptible, apparent
5. various	diverse, manifold
6. gayer	merrier, livelier, more cheerful
7. gladness	joyousness, delightedness
8. glides	moves gently
9. dark	gloomy
10. musings	meditations, ponderings
11. mild	gentle, soft, calm, tranquil, tender, pleasant
12. sympathy	compassion, tenderness
13. steals	takes
14. sharpness	keenness, acrimoniousness, bitterness
15. ere	before, sooner than
16. aware	appraised, informed

The above are the words marked by the teacher with a star, in the Synonym Exercise for Study in Reading "Thanatopsis," first stanza.

8. Fables.

A few authors of "Language Books" use a great many fables. They are useful for "Lessons in Dictation," especially useful for

"Lessons in Reproduction." But the primary use is in the "Lessons of Application."

After the pupils have become familiar with two or three fables, simply as stories, they should be led to see that a truth is hidden beneath the mere story, and that the fable really means something and is meant to teach a lesson. If this is well understood the pupils have learned a valuable lesson; that of looking beneath the surface; of reading with a desire to find the real meaning of books.

The pupils soon discover that fables are usually stories in which animals talk, and take the place of men. The figure of speech called personification may now be taught. Note: The use of capitals in a personified noun is now left largely to the inclination of the writer.

When the implied meaning of a fable has been discussed and the moral lesson drawn from it, this truth should be applied to some simple, practical story of everyday life. A fable treated in this way becomes an important factor in the development of original stories.

The pupils are asked what to look for in a story, and usually the teacher draws forth the idea that a story should tell the time, and the place of something that happened to certain people, of whom they are talking.

An outline should be written on the blackboard and followed in the composition of original stories.

The following order is given only as an example, and need not be strictly followed by the teacher:

TITLE.

1. Time.
2. Place.
3. Characters.
4. Incident (or happening).
5. Result.
6. Conclusion—Moral.

A fable should first be given as a lesson in reproduction before attempting to apply it. After a discussion in the grade, as to the probable meaning of the fable, the pupils might give *orally* several short, original stories, following the ideas suggested by the grade. In this way a train of thought will be started which may well be left to sink into consciousness and progress in the minds of the pupils, for one or more days. In lessons requiring thought and originality, do not adopt a course of crowding.

After this preparation an interesting language lesson may be given.

Have pupils write the reproduction of the fable, and then on the same sheet of paper, or on a different sheet, the application of it.

9. Application of Proverbs.

The same general treatment already given for fables and their application may be adapted by the teacher to language lessons in proverbs. The pupil must be familiarized with the character of the work before beginning written exercises in the application of proverbs.

After the pupils have been provided with and can recite a few proverbs, the teacher selects one to be studied with them. They decide that a proverb is a short saying that has become familiar by constant use, and that has a two-fold meaning. That the words taken literally mean just what they express, but hidden beneath the apparent meaning, is another truth applicable to the incidents of the daily lives of each one of them. It is this *truth* that they are to look for and apply.

When the object of the lesson is well understood, the teacher may assign a proverb to each pupil, if the grade is not too large to exhaust the stock of proverbs on hand, or the grade may work on two or three of them.

10. Action Lessons.

Teachers find that action lessons, doing and telling how, are very useful as language work.

A pupil may be able to perform an action with skill and yet fail in describing the process by which the work was accomplished. Many actions either in school or home work will be found good subjects for lessons of this kind. The most trifling details of school work will be raised in the pupil's estimation by these lessons and consequently will be performed with greater care.

The teacher will soon discover that these lessons give excellent exercise in the highest powers of the mind, and that it is not an easy thing to tell exactly how a thing should be done. The language must be clear and concise. To vary the lesson let the pupil describe or invent a game. The proof that the description is well given will be the ability of the pupils to play the game from the given directions.

Many pupils come from homes where the aid of even those in the lower grades is necessary. The subject for action lessons can thus be drawn from many varieties of home work, and the exercises be made decidedly practical. The teacher will find here an opportunity to lead the pupils to see that a duty, even a humble one, well performed is noble.

Note.—During the first and second grades, the language training is, of course, principally oral; but when written work is required, it should be used afterward as a reading exercise. The thought in this work being that of the pupil, expression will come naturally. Pay much attention to narration; but pupils should be asked to relate only those events that they have witnessed or experienced within a short time previous to their efforts at narration, or events that may be inferred by inspecting pictures used for Constructive Reading Lessons.

Make all the language exercises brief; and, at the beginning, also make them very simple, in order that both pupil and teacher may be spared the discouragement arising from the attempt to overcome too rapidly the initial difficulties of composition, such as spelling, punctuation, penmanship, formulation of thought, and the various conventionalities of form.

GRAMMAR.

This course of study in grammar and composition is a broad, general suggestive outline for teachers, and is planned to meet the requirements of the many different texts adopted in our state. Teachers will do well to study it carefully, to study the pupils carefully, and then modify the course more or less, as the ability and needs of the classes may demand. For further help and suggestions the teacher will find of great value the following:

1. Prefaces and Introductions to the various grammars adopted in the State.
2. Other State courses of study, as Indiana, Wisconsin, etc., free.
3. Various city courses of study, as Seattle, Tacoma, Spokane, etc., free.
4. Committee of Ten Reports, American Book Co., 35c.
5. Course of Study for Common Schools, Hammond Bros. & Stephens, Fremont, Nebraska, 25c.
6. Chubb's "The Teaching of English," The McMillan Co., $1.00.
7. Other Manuals. Other publishers. Generally free.

Every teacher of grammar and composition should bear in mind the following:

All "rules of grammar," and principles, should be deduced by the pupil—under the guidance of the teacher—from the reader, geography, history, etc. They should not be memorized from the grammar.

The text itself is to serve as a manual to direct the teacher what to take up, and to give him suggestions, illustrations, etc. *It is to be used by the student after the law has been developed,* e. g., the teacher finds, after consulting the course of study, that "capital letters" is the next topic in his work. He turns to that subject in his grammar and sees the various uses of capitals, suggestions, illustrations, etc. Thus prepared, he wisely selects his similar illustrations from the reader, etc., and from the pupil's own usage and knowledge, and thus builds up or deduces the laws of capital letters. *Never should the teacher start with the general law of the text.*

The teacher should always bear in mind the purpose of teaching grammar. It is to help the child, 1st, to read and hear correctly, with discrimination, and with understanding; 2nd, to speak and write correctly, briefly, simply, with discrimination, and with force. In every phase of grammar he presents to his pupils, the teacher should ask himself if this particular thing fulfills one of these functions. If it does not, little time should be given to it. The other things which grammar gives to a student will take care of themselves. Grammar for grammar's sake, is of minor importance.

The course of study attempts to suggest general topics for each semester of the sixth to eighth years, and gives some idea of the de-

tail work needed. It also calls special attention to those phases of subjects that should be emphasized.

Probably three periods a week should be given to the study of grammar. One period a week should be given to oral composition, and one to written composition.

The subjects of compositions should be chosen half from the geography, the reader, history, etc., and half from the child's own experiences. They should also include letter writing. They should deal with simple narrative and descriptive themes, *e. g.*, "How I Spent Thanksgiving," "How I Make Bread," "What I Did My Birthday," etc.

Unless the errors in the compositions are carefully marked by the teacher and corrected by the pupil, little good will come from this work.

That reading goes hand in hand with grammar and composition, must always be borne in mind. The reader is a source for the laws, for illustrations, for authority in cases of doubt or question, and for comparison and inspiration.

In all subjects, in all places the teacher should require good English.

Sixth Year—First Semester.

Spend two to four weeks in reviewing the work of the fourth and fifth grades,—placing emphasis on the practical, useful principles which the pupil needs in writing and speaking the English language. Give one or two lessons on the purpose and value of the study of grammar and composition. Take up the most common laws of capital letters—chief words in title of themes, beginning word of a sentence, proper nouns, "I," "O," etc. Spend two or three days in deducing from the reader, or other texts, the chief principles underlying the paragraph. Study thoroughly the simple sentence—with emphasis upon the subject and predicate, and their agreement. Hand in hand with the study of the subject and predicate must go a little study of the parts of speech, *i. e.*, classification. Treat thoroughly, too, the simple clause and phrases. Give frequent drills in dictation work, to fix the above principles in mind. In letter writing, study particularly the simplest and briefest business letters. In composition, let half of the work be oral, half written. The oral may be reports on current happenings, on material from the other lessons, etc. The same themes can be worked up in written reports. Train pupils to talk and write clearly and coherently. Teach every pupil to overcome his own false syntax, as found in his themes.

Sixth Year—Second Semester.

Deduce (and review) from the reader and other texts the more simple points of punctuation, such as the period, the comma, the question mark, etc. Show clearly that punctuation is solely to help the reader understand exactly what the writer wishes to express and that in general position of words in the sentence should be such

that little punctuation is required. Teach the compound sentence—how to combine simple sentences, and how to separate the compound into its parts. Study modifiers, participles, and infinitives. Study the complex sentence. Do further work on the paragraph. See that the pupil can arrange its content carefully, simply, and logically. In composition see that the pupils use readily the principles already learned in the grammar. In letter writing teach special forms of business letters—as applications for positions, etc. Continue the work in dictation. In the main the semester should be a continuation of the previous one.

SEVENTH YEAR—FIRST SEMESTER.

Review in a few lessons the essentials of the sixth year. Spend a lesson or two in discussing what inflection is. Show that "declension," "comparison," "conjugation," are "inflections" of different parts of speech. If you can, show that the English language is almost an "uninflected language," when compared with Latin or German,—which are highly inflected languages. Learn the inflection of nouns, adjectives, and pronouns. In the noun, emphasize: sommon and proper, how form plural, and how form possessive. In the pronoun emphasize: the correct case form, the right demonstratives, interrogatives, and relatives. In the adjective emphasize: the right adjective, and a discrimination between adjective and adverb. Study the friendship letter. Continue dictation work. Teach each pupil his own errors in speech. In composition continue half oral, half written. As subjects use current happenings, topics from the history, pictures, a synopsis of a story read by the pupil. Study specimens of good narration and description from the various text-books, magazines, etc. Outline these, deduce the principles governing them and apply these principles in the class-room work. Emphasize simplicity, brevity, and correctness.

SEVENTH YEAR—SECOND SEMESTER.

Study the remaining "parts of speech." In the verb emphasize: those irregular verbs in most common usage, as "do," "go," etc,; the choice of *right* verb, the *best verb*. In other parts of speech emphasize *right* adverb, *best* adverb, *right* preposition, *best* preposition, as "in" and "into," "by" and "with," etc., and a wise discrimination in the choice of conjunctions. With all this inflection, continue the study of the sentence and the paragraph. In letter writing study the social forms. In "false syntax" and composition continue as first semester. A little work on simple "explanation" may be given at the last of the semester as, "How I Prepare My Lessons," or other such subjects.

EIGHTH GRADE—FIRST SEMESTER.

Make a thorough study of analysis, and with it whatever work in diagraming is necessary to give concrete illustrations for difficult sentences in analysis. Analyze paragraphs, chapters, poems, and stories. Omit all puzzle sentences, and sentences with archaic or un-

usual forms. Teach the three or four most simple figures of speech, as the simile, metaphor, etc. Study short and long sentences, balanced and loose sentences. In letter writing take up telegrams, and other business forms yet untaught. In composition deal thoroughly with description of types, as the "Chinaman," the Newsboy," etc., and do a great deal with "explanation." Emphasize: accuracy, variety of sentence form, well-rounded paragraphs, well-organized paragraphs, the topic sentence of paragraphs, and even more thoroughly the deduction and making of plans for composition work. Have pupils write original stories of a simple nature from outlines furnished by the teacher. In all the work, place emphasis upon correct, simple, brief, yet accurate form.

EIGHTH GRADE—SECOND SEMESTER.

Continue work of the first semester and spend four or five weeks in a thorough review of the practical working principles of the entire text. Emphasize those things in which the pupils show, by their conversation and class and composition work, that they need further help.

GEOGRAPHY.

In teaching, as in other work, there are immediate and ultimate results and it is the latter that are of more consequence. The work that the pupil is doing this year is of consequence only as it determines what he will do in years to come. To develop a taste for geography and insure its careful study, not only through the pupil's school days, but also through life; to make it a constant source of knowledge, assistance and happiness is the end most to be desired.

In order to foster such growth or development we must begin by making the subject a part of the learner's own observation and experience. It must be "Home Geography," or, in other words, the first CONSCIOUS looking about of the child upon his surroundings. The true order of geography study is: "First, see; next, produce; and then study the productions of others."

Through a study of the physical forms, the industries and institutions of man as seen in and around his own home, the child forms standards of comparison by which to gain a conception of the world as a whole.

Give the child an opportunity to observe facts in nature. The observing of them will be easy early in life, thinking about them will be easy later. Begin the study of geography with field work, as this gives the correct concepts of type forms and the surface of the earth. Children thus learn the true meaning of geographical language. They can compare what they learn from pictures and descriptions of things that are distant and strange from home forms.

Field work thus becomes the best preparation for the use of the text book and atlas. Words without experience to explain them are without value. Field work is therefore necessary in all departments of geographical instruction, but it is needed in greatest amount at the beginning of the course and in the city schools.

The teacher who has the preceding ideas or principles well in mind will make a few mistakes in applying them in practice, but experience gives ease in this as in all other work.

The following cautions and directions will aid the novice in field lessons:

1. Be sure you have well in mind what you are to attempt to teach in the field lessons, which you propose to give. Make a written list of things, few at first, which you hope to accomplish.

2. Make the proposed trip first alone, or in company of another teacher, and work out the plan of your entire lesson on the spot.

3. Take a small section of your class at first, you can take more pupils after practice.

4. Remember that the object of the field lesson is to have your pupils observe natural objects of phenomena which they have never observed before.

5. Learn how to have most of the talking done by the pupils without allowing the conversation to wander from the subject of the lesson.

6. Have the pupils use as many senses as possible in the study of an object.

7. Give due prominence to relations, cause, effect, comparative position, weight, size, usefulness, etc.

8. Teachers sometimes fail in field work because they attempt to teach too much in one lesson. It is wiser to have brief lessons of short duration and to develop one truth at each.

9. The language used must be simple enough for third grade children while the science is as reliable as in the most elaborate physical geography.

10. Too great demands should not be made upon the pupil's power of attention in the field any more than in the school-room.

11. Free and full reproductions of the work of the field lesson are to be required from each pupil. These lessons or reproductions may be either oral or written, or both.

The time and thought taken for a few field lessons a year does not detract from the quality of work possible in the fundamental lessons of the school course, and brings rich returns in a larger knowledge and better appreciation of natural life.

It is well to remember that physical geography is always more interesting to the child than either local or political geography and should precede it, for by giving the child what he likes best we are working along the line of least resistance and will secure better results with less effort.

It is possible to classify the topics of home geography under a few large heads, like, soil, hills, mountains, valleys, drainage, rain-

fall, etc., and to take up the details of each group in succession, showing the illustrations of each in the immediate environment. It does not seem wise to do this for several reasons. In the first place classification should not be introduced in the beginning, but rather developed as the work progresses. Another reason for not so arranging the topics is that it tends to take away from the subject its distinct personal flavor. We want our geography to be HOME geography in fact as well as in name. In a school course, therefore, those topics should be first introduced that influence most directly the largest number of pupils in their out-of-school life. Out of school is associated with play and has already given the pupil many experiences that can be used to good advantage. The school-room or school-yard may be a fine field for geographical topics but it does not follow that these are the only fields of introduction to the subject.

Every locality has its own peculiar home geography by which the individual teacher must be guided. On the prairies of Nebraska or the plains of Dakota soil is, perhaps, the leading topic for consideration, especially in the country districts. This, however, does not hold true in all localities.

The object of this work is to make it as personal as possible so that each child may contribute his share of experience to the general fund. With such a beginning it is easy to lead out to the conditions of the vicinity and the home. The necessity for food, clothing, fuel, lights, water, transportation, communication, streets, sewers, etc., are all topics to be considered at this stage of the work.

When the more important home features influencing the life of the children have been brought out and related, enlarge the field of the subject radially until the whole world is sketched in its relation to the individual pupil.

By means of imaginary journeys the most important points in the home county are visited and the occupations, productions, surface and climate noted and compared with like conditions at home. The means of communication and traveling are discussed, particularly the uses and importance of roads, railroads, navigable rivers, oceans, bays, harbors, lighthouses, the telephone, the telegraph, and the post-offices, with occasional reference to the conditions that have determined the paths of the railroads, the position of lighthouses, the location of harbors, etc.

While studying local geography the pupil is incidentally introduced to relative and exact distance and direction. He learns to distinguish between a picture and a plan or map, hence is ready to work intelligently on regions that are distant and strange.

The needs of the child and their fulfillment suggest the means for carrying on this branch of the work. He is easily led from himself to a study of the agents needed to supply his wants. It is not a long step for him to go from the food he eats to the farmer who helps to provide it, or to the means employed in its transfer from the

farm to the home. Nor is it hard for him to combine the thought of the busy miner toiling in the dark earth with that of his own warmth and comfort.

Through this work he realizes something of the great amount of labor necessary to supply the needs of daily life and also some of the physical conditions which determine this labor. He sees his dependence upon others and the need of doing his share of the world's work. He is gaining more than simply a superficial knowledge of commercial and physical geography for his interests are broadened and his sympathies deepened.

In passing from the home outward, those commodities in most common use are dealt with first. As each commodity is considered the people and lands that produce it are studied. No part of the work in geography is so full of interest to the ordinary child as the people of the world, how they dress, what they eat, how they live, their manners, customs, productions and means of transportation. These are live subjects. Children are much more eager to know how John Chinaman lives when at home than to know where the Chinese Empire is located. The condition of climate, surface, soil, transportation and labor that makes the commodity a possible product is thus an objective point. In this way a casual study is made of the life and of the varying conditions of the world. Casual geography may be made very attractive to the children and by emphasizing it we lay a broad foundation for future work.

Third Grade—First Semester.

Surface features in immediate vicinity of school.

Study of atmospheric conditions through daily weather observations and records.

Direction: (1) Relative, as "toward," "right hand," "left hand," etc. (2) Exact, as how the sun shows direction; how the compass shows direction; observation of the positions of the North Star and the Big Dipper.

Distance: Necessity for standard of distance shown from use of relative distance as expressed by "near to," "far from," etc. These terms are too indefinite. An exact unit must be taken first as the standard. Teach the mile as a unit, and from this starting develop an appreciation of distances. Develop accurate ideas of a minute, a ten minute period, half an hour, an hour, as units of thought. Use these units of time as means of developing the larger units of distance—such as ten miles, twenty miles, etc.

Easy distances measured in paces and feet.

Plan of school room, school yard and of that part of the city or country adjacent.

Natural phenomena: Rain, snow and hail; steam, mist, fog; clouds —form and work; dew—where, when; frost; springs—where, why; rivers and brooks; wind and its work.

Local Geography: Industries of home region as determined by its surface, soil, climate, waterways and railroads.

Imaginary journeys to important points in home county, studying each by comparing with home region as to similarities and differences.

Model and draw up map of county. Make progressive map while conducting class through county.

THIRD GRADE—SECOND SEMESTER.

Child life in other lands:

Our homes—some other homes. Our clothing and food—the clothing and food of other children.

Our amusements—other children's amusements.

Our schools—the schools of other children.

Roads, paths and streets.

How we travel—how our forefathers traveled—how other people travel.

FOURTH GRADE—FIRST SEMESTER.

The world as a whole:

Location of hot, cold and temperate parts of the world.

Land and water in cold part.

Follow same order in teaching hot and temperate parts of the world.

Position and form of Western Continent.

Position and form of Eastern Continent.

Position and form of each of the six grand divisions.

Map reading and making. To include progressive maps; relief, temperatue, rainfall, production, population and transportation maps.

Comparison of Western and Eastern Continents.

The great oceans. The inhabitants of the sea.

FOURTH GRADE—SECOND SEMISTER.

Local Geography:

Teach State of Washington as a whole—showing relief, drainage, etc.

Review work of third grade on home county, and teach the counties of the state in detail.

Soil: How made; work of water on soil; brooks and soil; germination.

NOTE.—Work on soil and germination to be carried on experimentally, by means of specimens, window boxes and school gardens.

FIFTH GRADE—FIRST SEMESTER.

A general study of North America:

1. Location as to land masses.
2. Latitude and longitude.
3. Topographical study, with drawing of relief maps, or modelin sand, clay or putty.

Study of United States as a whole:

1. Location, form, size, indentions, projections, surface, climate, productions, industries, transportation, cities, government.

During this study constant map drawing: (1) Relief maps in black and white (2) product maps in color.

Study of United States in sections, with map making: Relief, product.

FIFTH GRADE—SECOND SEMESTER.

United States dependencies:

Alaska. Porto Rico. Philippines. Hawaiian Islands.

A general study of South America, Europe, Asia, etc.

To be studied as above, with map making, to show surface, productions, etc.

SIXTH GRADE—FIRST SEMESTER.

Globe lessons:

Form and size of earth.

Motions: (1) Daily and results, (2) yearly and results.

NOTE.—Use lamp and globe in teaching earth's motions and change of seasons; teach ellipse; foci of ellipse, meaning of degree; zones; prime meridian and equator as base lines for measurement of latitude and longitude.

Physiography:

1. Forms of land as shaped by work of atmosphere and water.
   Mountains; valleys, young and old; plains, plateaus, soils, divides, river basins.
2. The atmosphere.
   Composition: Showing by experiment at least carbon dioxide, oxygen, water vapor. Develop properties of CO_2 and O.
   Primary cause of winds by experiment (show rise of heated air).
   Study of great wind systems of world.
   Belt of calms, trade winds, prevailing westerlies.
   NOTE.—These are well shown in Physical Geography. This study of the wind systems is fundamental to the study of climate. If possible, study United States weather maps.
   Monsoons, ocean currents, climate of land as affected by prevailing winds and nearness to water.
3. Distribution of plants, animals; races of men; kinds of government, religion; occupations of man.

North Ameria and detailed study of the United States.

SIXTH GRADE—SECOND SEMESTER.

South America:

Location, extent, coastal features.

Physical features: Study and drawing of rapid relief maps.

Climate, productions; people, occupations.

Countries in detail, emphasizing more important, as Brazil, Argentine Republic, Chili.

Eurasia as a whole:

Position on globe, form, size, coast features, physical features (emphasizing): (1) Continuous great northern plain extending from Atlantic to Pacific and constituting Russian Empire. (2) Great central highland, also extending from Atlantic to Pacific).

Europe:

General idea of, from map reading: (1) Comparative size, remarkable coast line. (2) Relief: Great lowland plain, highlands of Scandinavia and United Kingdom, Alps, Iberian peninsula, Italy, Carpathian region, Balkan peninsula, Caucasus and Ural regions, plains of Hungary and the Po river.

Climate as affected by prevailing westerlies and ocean.

Europe in detail:

Teach countries in order given in text used, placing most emphasis upon British Isles, German Empire, France, and others with which we are most vitally concerned. Teach Russia as including Siberia, making a special point of Trans-Siberian Railroad and its bearing on commerce.

NOTE.—It seems logical to take up some discussion of the foreign possessions of each country with the study of that country.

SEVENTH GRADE—FIRST SEMESTER.

Asia:

Situation relative to great Eurasian plain and highland.

Coast line; projections and indentations, adjacent islands.

Relief, with map work.

Climate: Especially monsoons of India, central deserts, extreme temperatures of northern part.

Countries of Asia in detail.

Place most emphasis upon China, India and Ceylon, Japan, Malay Archipelago.

Africa:

On account of the undeveloped condition of this grand division, it is best to teach it in its physical and commercial aspects.

Division as a whole.

Situation on globe, relief (emphasizing great river valleys), coast, climate.

Northern, central, southern Africa (emphasizing Nile valley, Sahara).

Adjacent islands.

Australia, Tasmania, New Zealand, Pacific Islands.

SEVENTH GRADE—SECOND SEMESTER.

Comparative Geography:

Review and intensive study of State of Washington.

Relief, with map making.

Noting six divisions: Olympics, Sound Basin, Cascades, Okanogan Highlands (region north of Columbia and Spokane rivers), great lava plain, Blue Mountains.

Rivers and river valleys.

Climate: Contrasting that each side of Cascades.

Products: Making of maps embodying these.

Irrigated valleys and projects.

NOTE.—Much valuable information on these subjects is to be found in the first volume of the State Geological Survey.

Transportation: Commodities locally shipped; commodities exported from state.

Dwell upon advantageous location of state for transpacific and Alaska trade.

Important state railroad lines.

Counties, leading cities, state institutions, government.

Review of United States in comparison with other countries.

Knowledge of the geographical features, natural resources and development of our own country should be definite and broad. This work should be something more than a mere review of the subject as previously taken up. The pupil's knowledge of the country's historay, together with his more matured powers of observation, should make the work more of a study of cause and effect and give results in breadth of understanding, which could not be attained in the lower grade work. The study of the continent should be introduced by a discussion of the historical events that led to its discovery, settlement, development and division into countries as we now find it. Its geography—physical and political—should be carefully reviewed, placing stress upon features that constitute important causes in its development; such as navigable streams, harbors, mineral deposits, climate, etc.

HISTORY.

The question of instruction in history in the grades below the high school is one that concerns the present condition of such instruction and also of an ideal condition towards which it is possible to work.

About one-half of the states have a uniform course in history. Those states that have a uniform course and are required to follow it are among the most advanced in public education.

The formative influence of classic literature and good reading upon young people is generally admitted. The reading of choice books by boys and girls is an indication of intellectual and moral progress. Such a taste once formed is a great aid in the subsequent work of education. But where does this taste begin and how may it be fostered? The schools of today are not in the habit of meeting, or do not generally attempt to meet, this problem until the children are verging into manhood and womanhood, that is, until the seventh and eighth grades.

What of the years from six to fourteen in which the great majority of the children get their whole school training? If there are choice tales, myths, stories and histories, which have the power to impress youthful fancy and feeling, let the early years reap the full benefit. The school knows best how to open the door and lead the children in; or at least it should be the pride of teachers to fit themselves for this duty. What books to select and how to best present the stories to children can be better judged by thoughtful educators than by parents.

The makers of our programmes have encouraged the public to believe that the history of the United States is the only history worth studying, in that it is, as a rule, the only history prescribed. It is studied in the seventh grade from 1492 to 1789, and in the eighth grade from 1789 to the present. This course gives but a warped, narrow, corcumscribed view of history. It is history detached from its natural foundation—European history; it is history suspended in mid-air; it is history that has no natural beginning.

It is indeed difficult to decide where the history of America should begin. If with the period of discovery and exploration, then it is in reality European history; if with the period of colonization, then it is rather English history; if with the adoption of the Constitution, then it is the history of a youth after he has attained his majority, but whose past is in oblivion. If the instruction in history in France and Germany is confessedly superior to that given in other countries, it is in no small part due to the breadth of view gained through the careful study of the history of other nations. The social unit, the political unit, and the ecclesiastical unit, is constantly enlarging, and the educational curriculum must widen its boundaries if it is to keep pace with the evolution in other directions.

Any study of American history must be worse than barren that demands the memorizing of a text-book, and leaves a boy in ignorance as to what are the fundamental facts in American history; that insists upon detailed information in regard to the campaigns of the Revolutionary War, but gives no notion of personal responsibility to the government established through that war.

The history of the United States is usually studied during the last two years of the grammar grade, when the boy or girl is from twelve to fourteen years old. This means that valuable time has been lost, for long before this age the interest of the child should have been awakened and held by the pictures of the past. In many instances the study of history is not correlated with either geography or literature. Text-books are used many times without collateral reading.

No criticism of existing methods is justified unless it carries with it a recommendation of changes that will possibly bring improvement. The following course is modeled after courses in some of the best American schools, and in its preparation a careful study of the programmes of work in history in the schools of England, France, and Germany was also made. It is believed that the following scheme of work in history can not only be justified by appeal to educational theory, but that it can also be defended as practical, inasmuch as it already carried out either wholly or in part in many schools.

FIRST AND SECOND GRADES.

FOLK-LORE AND FAIRY TALES.

Young children in the first grade are in the story loving period and are delighted with stories. Stories should always employ ideals —ideals of courage, strength, wisdom, patience, generosity, unselfishness, and kindness. Children imitate what they admire, and thus an ideal becomes an unconscious influence upon character. Ideals are the end as well as the center and source of our living. All the other powers are but means by which we seek to realize our ideals in our lives.

The plan for the first four years implies that the object is to arouse interest; the method used is to be wholly the oral one; the stories are to be united with lessons given in language and in geography; the selections of myths and stories are to give universal rather than particular notions; and the teacher is to have a sufficient acquaintance with history and literature to be able to decide wisely concerning the selections to be made. The following suggestions have proved helpful in story telling:

1. Know the story. Read many books for the fullest possible information. You must see all that there is in it if you are to lead the pupil to see it.

2. Feel the story. You must first be touched by the story before you can touch your pupil with it. Dr. W. L. Hervey, in his "Picture

Work" says: "The secret of story telling lies not in analyzing processes, not even in imitating good models, though these are all necessary, but first of all in being full—full of the story, the picture, the children, and then in being morally and spiritually up to concert pitch, which is the true source of power in everything. From these come spontaneity; what is within, must come out; the story tells itself, and of your fullness the children all receive."

3. Shorten it, by cutting out details which do not intensify the pictures. Brevity is the soul of story-telling.

4. Expand it, by giving a background of such details as are necessary for a clear conception.

5. Repeat it, and have pupils repeat it. A good story is always worth repeating.

LIST OF FAIRY TALES.

1. "The Old Woman and Her Pig"—Scudder's Book of Folk Stories.
2. "Little Red Riding-Hood"—Grimm.
3. "The Anxious Leaf"—Beeker's Norwood.
4. "The Three Bears"—Scudder's Book of Folk Stories.
5. "The Lion and the Mouse"—Aesop.
6. "Cinderella"—Grimm.
7. "The Fir-Tree"—Andersen.
8. "The Four Musicians"—Grimm.
9. "The Straw, the Coal of Fire, and the Bean"—Grimm.
10. "The Ugly Duckling"—Andersen.

Many other stories may be selected from the following books:

Grimm's Fairy Tales.
Andersen's Fairy Tales.
Lang's Blue Fairy Tales.
Lang's Green Fairy Tales.

THIRD GRADE.

In this grade it is hoped that a few classical myths which belong to the literature of Europe will be brought vividly before the children. Two or three recitations a week may be set apart for the oral treatment of classical myths. Are these simple charming stories which have been sifted out of the early Grecian literature too difficult for children from nine to ten years old?

Charles Kingsley in preparing the Greek myths for his children wrote: "How I love those old Hellens—they seem to me like brothers. They are come to tell you some of their old fairy tales, which they loved when they were young like you." Herbart, the philosopher, looked upon the poems of Homer as giving ideal expression to the boyhood of the race, and the story of Ulysses was regarded by him as the boy's book. For the child of eight and nine years he thought it the most suitable story. Hawthorne says of himself: "The author has long been of the opinion that many of the classical myths were capable of being rendered into very capital reading for children. No epoch of time can claim a copyright on these immortal

fables. They seem never to have been made, and so long as man exists they never can perish."

The astonishing brightness of fanciful episode and of pure and clear-cut imagery has an indestructible charm for childern. They soar into and above the clouds on the shining wings of Pegasus. With Eolus they shut up the contrary winds in an ox-hide and later let them out to plague Ulysses. In one form or another they introduce us to heroes, at least to great and simple characters. These myths bring children into lively contact with European history and geography. The early history of Europe is in all cases shrouded in mist and legend.

In order to present these myths in an acceptable manner, the teacher must steep himself fully in literature of this class, and bring her mind into familiar acquaintance and sympathy with its characters. It is well to mingle oral narrative and description on the part of the teacher with the fit reading of choice parts so as to better preserve the classic beauty and suggestion of the author. A simple reading of these stories for the entertainment of the children is not enough. It should take the form of a school exercise, requiring not only interest and attention, but vigorous effort to grasp and reproduce the thought. The result should be a livelier and deeper insight into the story than would be secured by a simple reading for amusement. All that is expected is that this paradise of children may be entered and a few of its choicest flowers plucked; and that a desire may be created in the child to return again and again.

BOOKS FOR THIRD GRADE.

1. "Adventures of Ulysses," by Lamb—Ginn & Co., price 35c. It contains the chief episodes of the career of Ulysses.

2. "The Wonder Book of Nathaniel Hawthorne"—Houghton, Mifflin & Co., price 40c. It contains among others: The Gorgon's Head, The Golden Touch, the Three Golden Apples.

3. "Kingsley's Greek Heroes"—Ginn & Co. It contains the stories of Perseus, The Argonauts, Theseus and others.

4. "Jason's Quest," by Lowell. The Argonauts with many other Greek myths woven into narrative.

5. "Stories of the Old World," by Church—Ginn & Co., price 50c. Stories of the Argo, of Thebes, of Troy, of Ulysses, and of Aeneas.

6. "Stories of Indian Children," by Mary Hall Husted—Public School Publishing Co., price 50c. Contains Indian myths in the child's language.

Many other books might be mentioned.

FOURTH AND FIFTH GRADES.

The time given to history in the fourth grade may be limited to two hours per week, and the method oral presentation. The entire field of history should be covered in the form of biography. The following list of names are suggested, not as a final selection to be rigorously adopted, but as indicating one way of arousing interest

and of conveying historical information at the age when ideas of time and place relations are only imperfectly developed, but when interest in individuals is keen and active. The list may be entirely changed, but the principle still remains:

GREECE—Lycurgis, Solon, Darius, Leonidas, Socrates, Demosthenes, Plutarch.

ROME—Romulus, Cincinnatus, Regulus, Hannibal, Cæsar, Agricola.

GERMANY—Alaric, Gutenberg, Charles V., Luther, Bismarck.

FRANCE—Clovis, Charlemange, Louis IX., Joan of Arc, Richelieu, Napoleon.

ENGLAND—Arthur, Alfred, William I., Elizabeth, Raleigh,, Cromwell, Pitt, Clive, Nelson, Gladstone.

SOUTHERN EUROPE—Mohammed, Loyola, Isabella, Columbus, Michel Angelo, Garibaldi.

NORTHERN EUROPE—Robert Bruce, Henry Hudson, Eric the Red, Adolphus, Kossuth.

AMERICA—John Smith, Wm. Penn, LaSalle, Patrick Henry, Boone, George Rogers, Clark, Franklin, Lincoln, Washington, Lee, Fremont.

For splendid and helpful suggestions on the method or oral presentation see "Special Methods in History," by McMurry.

In the fifth grade use the adopted book.

BOOKS FOR FOURTH AND FIFTH GRADES.

"Heroes of History," by Ida Prentice Whitcomb—Maynard, Merrill & Co. This is a splendid volume containing about seventy biographies.

"King Arthur and His Knights," by Maude L .Radford. Published by Rand, McNally & Co.

"Famous Men of Greece," "Famous Men of Rome," and "Famous Men of the Middle Ages," by Haaren and Poland. Published by the University Publishing Co., price 50c each.

These books have been prepared to meet the requirements of both the "Committee of Ten" and the "Committee of Fifteen." Each book contains some thirty biographies written in as simple and as interesting a manner as can be found anywhere. A few sets should be in every school. These books should be read by or to the pupils.

SIXTH GRADE.

In the sixth grade use the adopted book, doing the work as outlined therein. In those districts in which a text in English history has been adopted it is recommended that the following outline be followed:

ENGLISH HISTORY.

On first thought the outline which follows on English history may seem rather heavy, but it is given as a guide for the teacher as to the general scope and nature of the work. A careful reading and study by the pupil of some good English history, will be ample for

the work on English history. This work in English history is an invaluable preparation to the study of American history.

(1) *Roman, Britain and Saxon England* (55 B. C.-1066 A. D.)

Conquests: Roman, Saxon, Danish, and Norman. The chief characters: King Arthur, Alfred the Great, and Canute.

(2) *England under the Normans and Plantagenets* (1066-1485).

The following wars and battles led to territorial expansion of England, or set forth the warlike and aggressive spirit of the people: The War with Wales, the Scotch Wars, Bannockburn, Falkirk, The Hundred-Year War, Crecy, Poitiers, Agincourt, The War of the Roses, Towton and Bosworth, the Crusades with causes and results.

The following characters are intimately associated with its history of this period: William the Conqueror, Gregory VII., Henry II., Thomas A'Becket, Richard the Lion Heart, Edward I., Edward III., Edward the Black Prince, Wallace, Bruce, Joan of Arc, Chaucer, and Caxton.

(3) *England under the Tudors* (1485-1603).

During this period England touches America, and also comes in vital contact with the continent. The exploits of the following are to be studied: The Cabots, Raleigh, Drake, and Frobisher. This also is the period of the Revival of Learning and of the Protestant Reformation. Instrumental in bringing about these changes were Colet, Erasmus, More, Luther, Henry VIII., Wolsey, Edward VI., and Elizabeth. The following names stand for the literary development of the latter part of this period: Spenser, Shakespeare, and Bacon.

(4) *The House of Stuart* (1603-1649).

This period marks the beginning of the colonial and commercial expansion of England in both the New and the Old World. The East India Company, and the struggle with Spain and Holland for an East Indian Empire; the formation of the London and Plymouth Companies with settlements in the New World; the great Puritan migration, with settlements on the New England coast, are here important. The Stuarts' doctrine of divine right precipitated the struggle between King and people, the chief events of which were the granting of the Petition of Right (1628), the execution in church and state of the principle of "Thorough," the Puritan exodus, and the Civil War of the Long Parliament. Names intimately associated with that period are Cromwell, Hampden, Winthrop, Carver, Laud, James I., and Charles I.

(5) *Period of the Commonwealth and Protectorate* (1649-1660).

The struggle between the King and Parliament ended in the supremacy of Parliament and the execution of the King. The wars of the period were with Ireland, Scotland, and Holland.

(6) *England under the restored Stuarts* (1660-1688).

England extended her control in the New World. Proprietary grants of the Carolinas, New York, and Pennsylvania were made by

the Crown. War with Holland resulted in the capture of New Amsterdam. Close relations were established with the King of France by the secret treaty of Dover. Adherence to the doctrine of divine right cost James II. his throne in the revolution of 1688.

(7) *The Orange-Stuart period* (1688-1714).

England was closely connected with the continent. The War of the Palatinate, called King William's War in America, closing by the treaty of Ryswick; and the War of the Spanish Succession, called Queen Anne's War in America, closing by the treaty of Utrecht, were waged to preserve the balance of power. A closer union with Scotland was made by uniting the legislature (1707).

(8) *England under the Hanoverians* (1764).

The Act of Succession established the new dynasty. The principal wars of this period were waged to extend or to defend England's colonial empire, or her commercial power. The Seven Years' War, or French and Indian War, was a contest for empire in both the New and the Old World; the Boer War was a contest for empire in Africa. In the American Revolution, England lost the major part of her possessions in the New World. Fundamentally the Napoleonic War was commercial on the part of England. The Crimean War was waged to preserve the balance of power in Europe. Points of especial importance are Berlin and Milan decrees; Sepoy Rebellion; Monroe Doctrine; War of 1812 with America; abolition of slavery; the Trent affair; Alabama Claims. The chief names of this period are Walpole, Hastings, Clive, Wellington, Peel, Cobden, William Pitt the younger and elder, Disraeli and Gladstone. Important dates are 1660, 1688, 1689, 1707, 1800, 1815.

SEVENTH AND EIGHTH GRADES.

HISTORY AND CIVICS.

U. S. history as outlined in text adopted.

CIVICS.

It is generally conceded that the fundamental purpose of the public schools is training pupils for good citizenship. This does not mean a study of the mere machinery of government; every political boss or ward heeler is familiar with the machinery of government. The training that is desirable is such as will lead to a greater love for one's country, consideration for the rights of others, respect for law because it is law; appreciation of the benefits of organized society and good government.

No text-book is necessary for the competent teacher. Civics should not be taught as a separate branch below the High School. Geography, history, current events, the reading lesson furnish ample opportunity for instruction in civics. The following suggestive paragraph is taken from the Maryland Course of Study:

"For those who are afraid to undertake this idea of teaching civics from history, from life in and about the school-room, and from public events—the convening of Congress, the passage of bills, the election of public officers, the reception of a German Prince—as recorded from day to day in the press, the text-book especially prepared for this work is indispensible. To those who can follow the plan as herein outlined, such a book is most excellent for reference; but, as in every other subject, the prime requisite is the teacher. Given all the books and a dead book-enforcer, and you get little; given no books and a live, sympathetic, intelligent co-worker, and you will get life and living. He must, in this respect, be human, intensely human; must know that there are many things the child doesn't know, and some that he does; know, and keep remembering, there are many things he didn't know when he was a child; know, and not forget, there are some, perhaps many, things he doesn't know even now; know there is a difference between understanding and knowing; know that, in days gone by, there were people and countries and constitutions, and that in all of these ways are we but the outgrowth of the past; know that, where our constitution touches the life of the individual, it is easily appreciated, and that a penny or a canceled postage stamp can do more to arouse interest on the part of the child in the power of Congress than a dozen explanatory pages; know that, as the power of the State as embraced within its constitution, cannot interfere with the powers of the United States, so the principles upon which the constitution of the latter is founded, must be within the bounds of the "Higher Law"—the divine law of justice and right. And, knowing all this, be just human enough to make the child want to know it through him, and god-like enough to make the child love and respect him as well as his knowledge."

Fifth Grade.

Pupils use note books in this and succeeding grades. The ability to use a note book is invaluable to the student throughout his entire school life. Definite results are thus obtained. Make a simple study

of taxes—what they are, how levied, how collected, for what purposes they are spent. Get a tax receipt. Study the various items on same. Get the pupils to make a list of things for which public money is expended. Why are these expenditures made? Note the divisions of government as national, state, county, school district, road district. Study the duties of school officers and other local officers. Investigate the care of poor, insane, deaf, incorrigible, blind, feeble-minded. Ask for names of persons holding district or county offices. Show that every citizen owes certain duties to every other citizen and to his country.

Sixth Grade.

Study the county officers, their duties, how chosen, terms of office, salaries, etc. A visit to the county court house or a description of the county offices and county court will be interesting. Names of the various officers. Study methods of nominations and elections. What is meant by the Australian ballot, direct primaries, caucuses, conventions, etc.? Grasp the essential difference between voluntary organizations like clubs, lodges, churches, and the real government. In connection with the geography of state, study the organization of state government. What are the titles of the offices of executive departments? How many members of the legislature? Duties of supreme and superior court judges? Location of educational institutions? Parliamentary practice, rules of order, etc.

Seventh and Eighth Grades.

Correlate civics with history. Study the town meeting in connection with settlement of New England. Various kinds of colonial government in connection with the several colonies. Study Declaration of Independence in connection with events of that period; also Articles of Confederation, Ordinance of 1787. Let the pupils study the Constitution in connection with the Constitutional Convention and the amendments as they were adopted. Why were these amendments made? At opportune times, study such topics as the cabinet, the spoils system, emancipation, internal improvements, the tariff, election of President, veto, impeachment, treaties, coinage, declaration of war, etc. Always refer to the provision of the constitution bearing upon these questions. Do not neglect a study of the great social, industrial and political problems of the day. Systematically study current events.

NUMBER AND ARITHMETIC.

GENERAL SUGGESTIONS.

Keep in mind the object of the work and the amount to be accomplished each half year.

Be sure the child has the idea of the number before you teach the digit representing it.

The objective work is to give meaning to the process and should be discarded as soon as it has served its purpose—subject to being recalled.

If desirable, change the order of the outline.

Make all work intelligible to the pupil.

Use the equation whenever it serves a good purpose.

Have oral work throughout the entire course.

Strengthen weak points by timely, incidental if practicable, reviews.

Introduce the reason for each process as fast as the advancement of the class will justify.

In drill work—1st, accuracy; 2nd, speed.

In all written work, neatness and legibility.

Introduce new terms when needed, and tell that which the pupil cannot find out for himself.

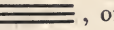
The development of arithmetic is effected through comparison and measurements. Hence the first steps should be objective, and as much as possible judgment inducing. This suggests preliminary work in sense training. Sense training is a basis for all lines of study, but certain phases of it seem peculiarly adapted to the introduction of number work.

FIRST GRADE—FIRST SEMESTER.

By means of objects (splints, rectangles, triangles, cubes, spheres, books, etc.,) make plain the meaning of such terms as, *longer than*, *shorter than*, *larger than*, *smaller than*, *broader than*, *narrower than*, *heavier than*, *lighter than*, *thicker than*, *thinner than*, *as large as*, (equal to) *as small as*, *as long as*, *as short as*, *as thick as*, *as thin as*, *as heavy as*, *as light as*.

Familiarize children with inch length, foot ruler, yard stick, meter, square, rectangle, triangle, circle, cube, oblong, sphere, semi-circle, hemi-sphere, by handling, noting and comparing.

Teach numbers to 10, additively and subtractively, first presenting each as a whole, so that children must count (analyze) to ascertain the number.

To illustrate, suppose the number to be presented is 3. The splints may be placed upon one another in such a way as to have a oneness in appearance, as or they may be in a pile close together, as  , or three books in a pile, or any objects of uniform size.

The child then in answer to the question how many, separates them with the eye or hand (counts) answers one, one and one, two and one, or three, if he knows the number name. If not, give it.

Next test by asking children to show 3 objects, take three steps, hold up the hand 3 times, count 3, show 3 fingers, make 3 marks, etc.

Now ask, 2 cubes and 1 cube are how many cubes? 2 boys and 1 boy? 1 marble, 1 marble and 1 marble? 1 ball and 2 balls? If a boy has 3 apples and gives 2 to his mother, how many has he left? If he has 3 pencils and gives 1 to his sister, how many has he left? Etc.

Using an inch length as a unit of measurement, have children measure lengths not exceeding 12 inches. Using a two-inch length as a unit measure, lengths of even inches to 20. Similarly, using 3, 4, 5 and 6-inch lengths as units, measure lengths that are multiples of these, the quotient not exceeding 10. Also use the foot ruler, yard stick, and meter in measuring lengths that are multiples of them. Use the pint as a unit and measure the quart, the half gallon, and the gallon. Use the penny and the nickle in making change to 10 cents. Teach the days of the week and the seasons of the year. Count sides of triangles, squares, and other polygons. Find perimeter of triangles and rectangles, the children measuring each side of the triangles and each side of squares and regtangles, until they discover that the opposite sides are equal, putting down the results and adding.

Teach these signs, +, —, =, and read them *plus*, more or added to; *minus*, less or take away; *equal*, as many as, until idea is grasped, then use only terms in italics.

Do abstract work in addition in these two forms, $\begin{array}{r} 6 \\ +3 \\ \hline \end{array}$ $6+3=$; and subtraction in these, $6-3=$ $\begin{array}{r} 6 \\ -3 \\ \hline \end{array}$

Do *not* combine addition and subtraction in written form, as $4-2+3=$

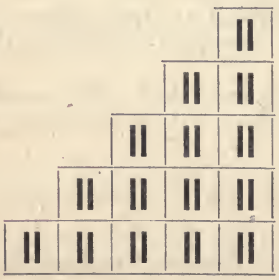
Working with splints, have the children find in how many ways they can make 2, 3, 4, 5, 6, 7, 8, 9, and 10, and write the ways as they are worked out, as $1+1+1+1=4$; $2+1+1=4$; $2+2=4$; $3+1=4$, etc.

Perform similar operations in subtraction.

First Grade — Second Semester.

Teach the $ and review some work of first semester involving it.

Teach these signs: $\times$, $\div$.



With this device, using splints if practicable, teach these multiplicative and divisive facts:

(*a*)	(*b*)	(*c*)
$1 \times 2 =$	$2 \div 2 =$	$\frac{1}{2}$ of $2 =$
$2 \times 2 =$	$4 \div 2 =$	$\frac{1}{2}$ of $4 =$
$3 \times 2 =$	$6 \div 2 =$	$\frac{1}{2}$ of $6 =$
$4 \times 2 =$	$8 \div 2 =$	$\frac{1}{2}$ of $8 =$
$5 \times 2 =$	$10 \div 2 =$	$\frac{1}{2}$ of $10 =$

Develop the idea of $\frac{1}{2}$ by means of circular card board or paper, creasing, cutting or coloring, before teaching (*c*), (*d*) and (*e*).

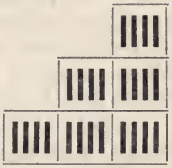
(*d*)	(*e*)
$3 \div 2 =$	$\frac{1}{2}$ of $3 =$
$5 \div 2 =$	$\frac{1}{2}$ of $5 =$
$7 \div 2 =$	$\frac{1}{2}$ of $7 =$
$9 \div 2 =$	$\frac{1}{2}$ of $9 =$

With this device teach:

(*a*)	(*b*)
$1 \times 3 =$	$3 \div 3 =$
$2 \times 3 =$	$6 \div 3 =$
$3 \times 3 =$	$9 \div 3 =$
$4 \times 3 =$	$12 \div 3 =$

Develop the idea af $\frac{1}{3}$ (suggestions concerning $\frac{1}{2}$), then teach:

$\frac{1}{3}$ of $3 =$	$\frac{1}{3}$ of $9 =$	$\frac{2}{3}$ of $3 =$	$\frac{2}{3}$ of $9 =$
$\frac{1}{3}$ of $6 =$	$\frac{1}{3}$ of $12 =$	$\frac{2}{3}$ of $6 =$	$\frac{2}{3}$ of $12 =$



With this device teach:

(*a*)	(*b*)	(*c*)
$1 \times 4 =$	$4 \div 4 =$	$\frac{1}{4}$ of $4 =$
$2 \times 4 =$	$8 \div 4 =$	$\frac{1}{4}$ of $8 =$
$3 \times 4 =$	$12 \div 4 =$	$\frac{1}{4}$ of $12 =$

Develop the idea of $\frac{1}{4}$ before doing (*c*). (Suggestions for $\frac{1}{2}$.)

Compare numbers learned directly and inversely as follows:

2 is $\frac{1}{2}$ of 4, and 4 is 2 times 2
3 is $\frac{1}{2}$ of 6, and 6 is 2 times 3
4 is $\frac{1}{2}$ of 8, and 8 is 2 times 4

2 is $\frac{1}{3}$ of 6, and 6 is 3 times 2
2 is $\frac{1}{4}$ of 8, and 8 is 4 times 2
3 is $\frac{1}{4}$ of 9, and 9 is 3 times 3
3 is $\frac{1}{4}$ of 12, and 12 is 4 times 3

Count and write numbers to 20—incidentally beyond, if desirable in connection with paging.

Do the following additions:

$1\frac{1}{2} + 1\frac{1}{2} =$;	$1\frac{1}{2} + 2\frac{1}{2} =$;	$1\frac{1}{2} + 3\frac{1}{2} =$;	$1\frac{1}{2} + 4\frac{1}{2} =$;
$1\frac{1}{2} + 5\frac{1}{2} =$;	$1\frac{1}{2} + 6\frac{1}{2} =$;	$1\frac{1}{2} + 7\frac{1}{2} =$;	$1\frac{1}{2} + 8\frac{1}{2} =$;
$1\frac{1}{2} + 9\frac{1}{2} =$;	$2\frac{1}{2} + 2\frac{1}{2} =$;	$2\frac{1}{2} + 3\frac{1}{2} =$;	$2\frac{1}{2} + 4\frac{1}{2} =$;
$2\frac{1}{2} + 5\frac{1}{2} =$;	$2\frac{1}{2} + 6\frac{1}{2} =$;	$2\frac{1}{2} + 7\frac{1}{2} =$;	$2\frac{1}{2} + 8\frac{1}{2} =$;
$3\frac{1}{2} + 3\frac{1}{2} =$;	$3\frac{1}{2} + 4\frac{1}{2} =$;	$3\frac{1}{2} + 5\frac{1}{2} =$;	$3\frac{1}{2} + 6\frac{1}{2} =$;
$4\frac{1}{2} + 4\frac{1}{2} =$;	$4\frac{1}{2} + 5\frac{1}{2} =$;	$4\frac{1}{2} + 6\frac{1}{2} =$;	$5\frac{1}{2} + 5\frac{1}{2} =$;

Repeat after dropping fraction from first number.

Do the following subtractions:

$2\frac{1}{2} - 1\frac{1}{2} =$;	$3\frac{1}{2} - 1\frac{1}{2} =$;	$4\frac{1}{2} - 1\frac{1}{2} =$;	$5\frac{1}{2} - 1\frac{1}{2} =$;
$6\frac{1}{2} - 1\frac{1}{2} =$;	$7\frac{1}{2} - 1\frac{1}{2} =$;	$8\frac{1}{2} - 1\frac{1}{2} =$;	$9\frac{1}{2} - 1\frac{1}{2} =$;
$3\frac{1}{2} - 2\frac{1}{2} =$;	$4\frac{1}{2} - 2\frac{1}{2} =$;	$5\frac{1}{2} - 2\frac{1}{2} =$;	$6\frac{1}{2} - 2\frac{1}{2} =$;
$7\frac{1}{2} - 2\frac{1}{2} =$;	$8\frac{1}{2} - 2\frac{1}{2} =$;	$9\frac{1}{2} - 2\frac{1}{2} =$;	$4\frac{1}{2} - 3\frac{1}{2} =$;
$5\frac{1}{2} - 3\frac{1}{2} =$;	$6\frac{1}{2} - 3\frac{1}{2} =$;	$7\frac{1}{2} - 3\frac{1}{2} =$;	$8\frac{1}{2} - 3\frac{1}{2} =$;
$9\frac{1}{2} - 3\frac{1}{2} =$;	$5\frac{1}{2} - 4\frac{1}{2} =$;	$6\frac{1}{2} - 4\frac{1}{2} =$;	$7\frac{1}{2} - 4\frac{1}{2} =$;
$8\frac{1}{2} - 4\frac{1}{2} =$;	$9\frac{1}{2} - 4\frac{1}{2} =$;	$6\frac{1}{2} - 5\frac{1}{2} =$;	$7\frac{1}{2} - 5\frac{1}{2} =$;
$8\frac{1}{2} - 5\frac{1}{2} =$;	$9\frac{1}{2} - 5\frac{1}{2} =$;	$7\frac{1}{2} - 6\frac{1}{2} =$;	$8\frac{1}{2} - 6\frac{1}{2} =$;
$9\frac{1}{2} - 6\frac{1}{2} =$;	$8\frac{1}{2} - 7\frac{1}{2} =$;	$9\frac{1}{2} - 7\frac{1}{2} =$;	$9\frac{1}{2} - 8\frac{1}{2} =$;

Do the same subtractions after dropping the fraction from the minuend and retaining it in the subtrahend; reverse the process by dropping the fraction from the subtrahend and retaining it in the minuend.

Add 2 to all numbers of first order (number represented by 1 figure).

Drill upon these additions:

Add 3 to all numbers of first order.

Add 4 to all numbers to and including 8.

Add 5 to all numbers to and including 7.

Add 6 to all numbers to and including 6.

Add 7 to all numbers to and including 5.

Add 8 to all numbers to and including 4.

Add 9 to all numbers to and including 3.

SECOND GRADE — FIRST SEMESTER.

Write, read and analyze numbers to 500, doing enough development to give a working idea of them. Analyze as follows: 234 = 2 hundreds, 3 tens and 4 units, and is read *two hundred thirty-four.*

Add 2, 3, 4, 5, 6, 7, 8 and 9 to all numbers provided the sum does not exceed 100. Examples:

$12 + 2 =$; $22 + 2 =$; $32 + 2 =$; $42 + 2 =$, etc

$13 + 2 =$; $23 + 2 =$; $33 + 2 =$; $43 + 2 =$, etc

Teach multiplication and division tables of 3's and 4's to 36 and 5's to 40, using device suggested for first year.

Count by 2's, 3's and 4's to 36; by 5's to 40. In counting by 2's begin with 2 and then with 1, and count down from 36 and 35; by 3's begin with 3, 2 and 1 and count down from 36, 35 and 34; by 4's begin with 4, 3, 2 and 1 count down from 36, 35, 34 and 33; by 5's begin with 5, 4, 3, 2 and 1 and count down from 40, 39, 38, 37 and 36.

Do direct and indirect comparisons between $\frac{1}{2}$ and 5 times, within limits of tables learned, as 2 is $\frac{1}{5}$ of 10 and 10 is two times 5; 4 is $\frac{1}{3}$ of 12 and 12 is three times 4, etc.

Explain prime factor, and find prime factors of all numbers under 20.

Drill on single column additions — in form vertical and horizontal, emphasis on numbers under 6, as 3+2+3+4+1= , etc.

Use 10-cent piece in connection with pieces used the first year in making change to 25 cents.

Teach weeks in a month; months in a year; things in a half dozen, and a dozen; inches in a foot; find perimeters of triangles, quadrilaterals and other polygons, increasing lengths of sides to conform to new numbers learned; measure aisles, desks, blackboads, etc.

Find $\frac{1}{2}$ of all numbers to 25; $\frac{1}{3}$ and $\frac{2}{3}$ of 3, 6, 9, 12, 15, 18, 21 and 24; $\frac{1}{4}$ of 4, 8, 12, 16, 20 and 24; $\frac{1}{5}$ of 5, 10, 15, 20 and 25.

Do much concrete work in problems made by teacher and some made by pupils.

Do all needed review work.

SECOND GRADE—SECOND SEMESTER.

Write, read and analyze numbers to 1,000.

Do abstract and concrete additions and subtractions, without carry, ing, sums and minuends not exceeding 1,000, as $\begin{array}{r} 235 \\ 421 \\ \hline 656 \end{array}$, $\begin{array}{r} 965 \\ 724 \\ \hline 241 \end{array}$

Count by 2's, 3's, 4's and 5's to 60 and down, observing former directions for beginning.

Do the multiplication and division tables through the 5's to 12 times, using suggested device when necessary.

Teach prime factors of all composite numbers to 25, and make list of prime numbers to 25.

Do much drill work in single column additions, in both horizontal and vertical form, using all numbers expressed by one figure.

Do concrete work involving the pint, quart and gallon; the pound, the $\frac{1}{2}$ pound and the $\frac{1}{4}$ pound; making change to 50 cents; time of day by the clock, fixing first the hour of 12, then 1, then 4, then 9, then other hours, then half hours, etc. (incidentally); dimensions of room; perimeters of triangles, quadrilaterals and other polygons, the lengths of sides conforming to numbers learned; comparisons of lines, triangles, quadrilaterals, cubes, parallelopipeds and prisms.

Do much concrete work in applied problems, that come within their comprehension.

Develop objectively $\frac{3}{4}$, $\frac{2}{5}$, $\frac{3}{5}$, and $\frac{4}{5}$; show that $\frac{2}{4}$ equal $\frac{1}{2}$.

Compare numbers between $\frac{1}{5}$ and 5 times, within limits of tables learned.

Teach $\frac{1}{2}$ of all numbers to 60; $\frac{1}{3}$ and $\frac{2}{3}$ of 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33 and 36; $\frac{1}{4}$ and $\frac{3}{4}$ of 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44 and 48; $\frac{1}{5}$, $\frac{2}{5}$, $\frac{3}{5}$ and $\frac{4}{5}$ of 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55 and 60.

Keep a record of the day of the week and date of the month.

Do such as 3×2 dimes + 2 cents = 6 dimes and 2 cents = 62 cents.

3×2 dimes + 2 nickels = 6 dimes and 2 nickels = 70 cents.

3×2 quarts + 1 pint = 6 quarts and 1 pint = 13 pints.

3×2 weeks + 3 days = 6 weeks and 3 days = 45 days.

Vary multiplier. Review.

THIRD GRADE—FIRST SEMESTER.

Read, write and analyze numbers to 5,000.

Do addition and subtraction with carrying, sums and minuends not exceeeding 5,000.

Children are familiar with $\begin{array}{r} 9 \\ 8 \\ \hline 17 \end{array}$ then they readily see $\begin{array}{r} 29 \\ 8 \\ \hline 37 \end{array}$ Call attention to the 1 ten of the sum of 9 and 8 being added to the 2 tens. Then observe this form: Eight, ten, thirteen (write the 3 units and count the 1 ten in ten's column); three, six, twelve, fourteen (write the 4 tens); six, seven, eleven, twelve (write the 2 hundreds and the 1 thousand.

$\begin{array}{r} 123 \\ 462 \\ 137 \\ 521 \\ \hline 1243 \end{array}$

In subtraction proceed as follows:

523	33	23	13
246	8	8	8
277	25	15	5

Eight from 13 leaves 5, eight from 23 leaves 15, eight from 33 leaves 25, etc., calling attention to the taking 1 ten with the units each time. Then six from 13 leaves 7, four from 11 leaves 7 and two from 4 leaves 2. (Other methods may be as good as this, but little children should know but one.)

Count by 2's, 3's, 4's and 5's to 12 times; by 6's to 6 times; by 7's to 5 times; by 10's to 10 times; by 11's to 9 times.

Even and odd numbers explained in connection with counting by 2's.

Multiplication and division tables in accord with the counting above.

Short division without carrying, as:

2)46, 2)82, 2)486, 3)693, 3)369, 4)48, etc.

Do direct and inverse comparison within the limits of the tables learned.

Squares to 36 and square roots of same. □ With paper or card board squares, each edge of which is 1 inch (tell children such is called a square inch, and the No. 1 called a square), have them find by placing small squares together the next square (2? No; 3? No; 4? Yes). Four small squares may be so arranged as to make a larger square. Can 5 small ones? 6? 7? 8? 9? etc. (They may discover the law.) Concrete work in making change to $5; in finding number of inch cubes in oblongs and cubes; the number of square feet in a square yard.

Develop the idea of $\frac{1}{6}$, $\frac{1}{7}$ and $\frac{1}{8}$ objectively, and do work in part taking.

Add halves, as: $\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{2}{2}+\frac{2}{2}=\frac{8}{2}=4$.

Also thirds, as $\frac{1}{3}+\frac{2}{3}+\frac{3}{3}+\frac{1}{3}+\frac{2}{3}$, etc.

Also fourths and fifths in a similar way.

Do corresponding work from text-book adopted, for drill application and reinforcement.

THIRD GRADE — SECOND SEMESTER.

Read, write and analyze numbers to 10,000.

Continue practice in addition and subtraction, sums and minuends not exceeding 10,000.

Count by 2's, 3's, 4's.....to 12's, beginning with 1, 2, 3, 4.....to 12.

Do multiplication and division tables through the 12's. Do multiplication with carrying, using one-figure multiplier until the process is learned, then 10, 11 and 12 as one-figure multiplier, then two figures, the product not exceeding 10,000.

Do direct and inverse comparisons within the limits of tables and fractional parts learned.

Find squares to 144 and corresponding square roots. Make list of squares learned.

Concrete work in making change to $10; in comparing lines; in finding perimeters of triangles and quadrilaterals, and comparing them; in finding number posts necessary to build fence around lots, and number of boards of stated lengths and number boards in height necessary to

build same; vary the length of boards, with reference to number feet posts are apart, and the number of boards in height; in finding the number of square inches in square feet; in work in linear measure and avoirdupois weight.

Develop $\frac{1}{9}$, $\frac{1}{10}$, $\frac{1}{11}$ and $\frac{1}{12}$, and corresponding part taken within limits of tables.

Do such as: $2\frac{1}{2} \times 2$ $3\frac{1}{2} \times 2$ $4\frac{1}{2} \times 2$ $5\frac{1}{2} \times 2$ $6\frac{1}{2} \times 2$ $7\frac{1}{2} \times 2$

$3\frac{1}{3} \times 3$ $4\frac{1}{3} \times 3$ $5\frac{1}{3} \times 3$ $6\frac{1}{3} \times 3$ $7\frac{1}{3} \times 3$ $8\frac{1}{3} \times 3$ $9\frac{1}{3} \times 3$

$2\frac{1}{4} \times 4$ $3\frac{1}{4} \times 4$ $9\frac{1}{4} \times 4$ $7\frac{1}{4} \times 4$ $6\frac{1}{2} \times 4$ etc.;

$5\frac{1}{5} \times 5$ $2\frac{1}{5} \times 5$ $8\frac{1}{5} \times 5$ $6\frac{1}{5} \times 5$ $9\frac{1}{5} \times 5$ etc,;

$2\frac{1}{6} \times 6$ $3\frac{1}{6} \times 6$ $4\frac{1}{6} \times 6$ $5\frac{1}{6} \times 6$ $6\frac{1}{6} \times 6$ $7\frac{1}{6} \times 6$ etc.

Also such as: $10 \div 3 =$; $13 \div 3 =$; $14 \div 4 =$; $16 \div 5 =$; $21 \div 4 =$; $25 \div 6 =$; $29 \div 6 =$, etc.

Do much abstract drill work in the multiplication tables. These tables should be known by the end of the third year.

Do corresponding work of text-book adopted.

Fourth Grade — First Semester.

Write, read and analyze numbers to 1,000,000.

Continue practice in concrete abstract additions and subtractions, developing as much accuracy and speed as possible.

Do short division with carrying, using 2 as a divisor until the process is grasped. Then use 5, 10, 3, 4, 6, 7, 8, 9, 11 and 12 as divisors. This work demands proficiency in the multiplication tables, hence whenever necessary review and drill on tables.

Continue abstract and concrete work in multiplication, multiplier not exceeding three figures.

Continue comparing numbers directly and inversely, and introduce aliquot parts as follows: Multiply 224 by 5, and divide 2240 by 2. Compare results. Which is easier? Five is $\frac{1}{2}$ of 10, and 10 is 2 times 5. Use this knowledge to multiply by $2\frac{1}{2}$ ($2\frac{1}{2}$ is $\frac{1}{4}$ of 10); by $3\frac{1}{8}$ ($3\frac{1}{8}$ is $\frac{1}{8}$ of 10); by $12\frac{1}{2}$ ($12\frac{1}{2}$ is $\frac{1}{8}$ of 100); by 25 (25 is $\frac{1}{4}$ of 100); by 50 (50 is $\frac{1}{2}$ of 100).

In connection with work in factoring, teach how to determine whether a number is divisible by 2, 5 or 10 without a remainder. Have class make a list of all prime numbers to 30.

Teach squares to 256 and square roots of same, extending list of squares.

Do little business problems requiring the making of change, and those involving loss and gain. Continue work of finding number posts necessary to build fences around lots, and the number of boards. and cost at so much a piece; also in finding number inch squares in rect-

angles, and inch cubes in cubes and oblongs. Do practical problems involving rents, and others of a local nature. Do corresponding work in text-book adopted.

Fourth Grade — Second Semester.

Teach long division, using 13 as a divisor, and graded diviends, until the process is learned, as: $13\overline{)156}$ $13\overline{)169}$ $13\overline{)273}$ $13\overline{)286}$ etc. When the process is learned, then use as divisors 21, 31, 41, 51, 61, 71, 81, 91; 22, 32,..... 92; 23, 33, ... 93; 14, 24, 34, ... 94, etc. (This is to enable the pupil to gradually grow into making the proper allowance for the unit figure of the divisor in estimating the quotient figure.)

Do not permit pupils to perform work by the long process with a divisor less than 13.

Find squares to 400 and corresponding square roots.

Have pupils extend their list of prime numbers to 50.

Teach how to determine whether a number is divisible by 3 without a remainder.

Do simple problems in wood measurement and finding cost by the cord.

Develop the idea of percentage, and apply it to little problems in interest for 1, 2, 3 or 4 years.

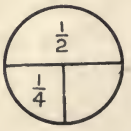
Show a board foot to the class, have them measure it, and then find number board feet in boards 1 foot wide and 1 inch thick and 8, 10, 12, 14, 16, 18 or 20 feet long; then boards 1 foot wide, 2 inches thick and same lengths; then 6 inches wide, 2 inches thick and same lengths; then 6 inches wide, 1 inch thick and same lengths. Do practical problems pertaining to local vocations.

Teach decimals to two places in addition and subtraction.

Do corresponding work in text adopted.

Fifth Grade — First Semester.

Add halves and fourths, using circular card board or paper and showing that to add halves and fourths the halves must be made into fourths. Use same device for other fractions. Then add halves and sixths; halves and eighths; halves and tenths; halves and twelfths; thirds and sixths; thirds and ninths; thirds and twelfths; fourths and eighths; fourths and twefths; fifths and tenths; sixths and twelfths.



Next add halves and thirds (both must now be changed into sixths); halves and fifths; halves and sevenths; thirds and fourths; thirds and fifths; fourths and fifths. Call the attention of the class to the difference of these two classes.

Next add fourths and sixths; sixths and eighths; sixths and ninths.

Next develop the idea of multiple, common multiple and least common multiple. It may be done as follows:

Three inches.

Two inches.

What lengths can be measured by a two-inch line? Ans. 2, 4, 6, 8, 10, 12, 14, 16 inches, etc. These lengths are called multiples of a two-inch length. Now tell me some multiples of a three-inch length. Ans. 3, 6, 9, 12, 15, 18 inches, etc. Can you tell some lengths that are multiples of both a two-inch and a three-inch length? Ans. 6, 12, 18 inches, etc. These lengths are called common multiples of 2 inches and 3 inches, You see the shortest one of these lengths is 6 inches, and it is called the least common multiple of 2 inches and 3 inches.

Drill on numbers under 20 (omitting largest prime numbers) until class can readily find least common multiples, then again take up the last group of fractions added and show the use of L. C. M. in that connection.

Treat subtraction of fractions in a similar manner.

Reduce fractions to lower and higher terms (latter involved in finding common denominator).

Involve these cases in business problems, thus increasing drill and application, chiefly with mixed numbers.

Also do work with decimal fractions involving tenths, hundredths and thousandths, abstractly and concretely.

Continue work in interest, making the time years and months. (Use aliquot parts for finding interest for 2, 3, 4, 6, 8 and 9 months.)

Continue work in lumber measurement and include flooring 1x4 and even lengths, and 2x4's. Teach bill making. Put it into practice in connection with problems involving the selling of lumber, groceries, hardware, implements, fruits, berries and farm products, etc.

Do corresponding work of adopted text.

Fifth Grade—Second Semester.

Teach multiplication of common fractions, illustrating the process objectively, and using no denominator greater than 20. Also teach multiplication of mixed numbers by mixed numbers, changing to improper fractions. Drill in abstract numbers. Apply to local problems involving mixed numbers.

Teach division of common fractions. Suggestive method. $1 \div \frac{2}{3} = \frac{3}{3} \div \frac{2}{3} = 3$ thirds $\div 2$ thirds $= \frac{3}{2}$. Compare the form of the quotient with that of the divisor. $1 \div \frac{3}{4} = \frac{4}{4} \div \frac{3}{4} = 4 \div 3 = \frac{4}{3}$. Compare quotient and divisor again. By this process lead class to see that in order to divide 1 by a fraction, it is necessary only to invert the terms of the divisor. Next drill orally as follows: $1 \div \frac{2}{3} = ?$ $1 \div \frac{5}{6} = ?$ $1 \div \frac{7}{8} = ?$ $1 \div \frac{7}{9} = ?$ $1 \div \frac{5}{8} = ?$ etc.

The next step is natural and easy. Since $\frac{2}{3}$ is contained in 1 $\frac{1}{2}$ times, it is contained in 2, 2 times $\frac{1}{2}$ times or 3 times; in 3, 3 times $\frac{1}{2}$ times; in $\frac{4}{3}$, $\frac{5}{3}$ of $\frac{1}{2}$ times; etc.

Now drill abstractly, and relate clearly multiplication and division of fractions.

Apply to problems involving mixed numbers.

Teach multiplication and division of decimals using 3 decimal figures and deducing rule for same from common form.

Make a drawing of a section of land; $\frac{1}{2}$ section; $\frac{1}{4}$ section; an 80; a 40.

Find the number of rods in perimeter of each, and cost of fencing at local prices, using rails, boards, poles or wire. Note the shape of the different parts; find cost of each at so much per acre, using aliquot parts; buy and sell, and calculate loss or gain; plant to crops (imagination), cultivate, harvest, sell, calculating all expenses, and find loss or gain. Given number of acres in a field and the length in rods, find the width in rods.

Find area of triangles by relating them to rectangles.

Review everything necessary, especially in bill-making.
Do corresponding work of text-book adopted.

Sixth Grade—First Semester.

With the beginning of the grammar school book the pupils should obtain a firmer grasp of all subjects, see more of the reason for the processes, and grasp a little of the logic of the subject. A general review is provided for in the following of the arrangement of most any good text by beginning at the first.

Do all the work of the adopted text including the reading and writing of numbers, by words, figures and letters, and the four fundamentals, noting underlying principles in all processes and supplementing the work of the book when needful. It is important that pupils learn to formulate principles. It tends to make them clearer.

Drill upon valuable short cuts in multiplication and division. For example, to multiply by 10 or some power of 10; by $12\frac{1}{2}$; by 25; by $37\frac{1}{2}$; by 50; by $62\frac{1}{2}$; by 75; by $87\frac{1}{2}$; by 125; by $16\frac{2}{3}$; by $33\frac{1}{3}$; by $66\frac{2}{3}$; by $83\frac{1}{3}$; by $333\frac{1}{3}$; by 98, 99, 198, 199, 998, 999, etc., and the reversing of some of these processes in division.

Teach the process of dividing by the factors of the divisor, using the short division, and then finding the remainder from the partial remainders. To illustrate: $46725 \div 42$ $(2 \times 3 \times 7)$

$$
\begin{array}{r|l}
2 & 46725 \\
3 & 23362 \ldots\ldots 1 \\
7 & 7787 \ldots\ldots 1 \\
 & 1112 \ldots\ldots 3
\end{array}
\qquad
\begin{array}{l}
\ldots\ldots 1 \\
\ldots\ldots 2 \\
\ldots\ldots 18 \\
\hline
21
\end{array}
$$

Bring out clearly the two-fold nature of division. (Division and Partition.)

Teach G. C. D. by factoring (if you prefer to use the Euclidian method, also, do not attempt explanation.) Give in addition to the questions in the book, if necessary, examples that will illustrate the uses of the subject. (Practice in factoring numbers, reducing large fractions of the common form to lowest terms, and finding the L. C. M.)

Do L. C. M., going deeper into the subject than in former grade and emphasizing its use.

Classify fractions from both the standpoint of form and of use.

Drill in all practical reductions.

Do the fundamentals in common fractions, emphasizing the principles, and endeavoring to have every question done intelligently.

Sixth Grade—Second Semester.

Do the work of the book in the reduction and four fundamentals of decimals, emphasizing the principles and reasons and supplementing the work when needful. Do applied problems involving U. S. money, whether in book or not.

Do compound denominate numbers, giving most attention to Avoirdupois weight, linear, square, land, cubic, and liquid measure, and time measurement, and some attention to Troy and apothecary's weight, and dry, paper, and circular measure.

In doing denominate numbers reduce up and down, involve the four fundamentals and apply to practical problems.

In longitude and time show the correspondence between time and distance; locate and explain the convenience of the day line; explain standard (R. R.) time, illustrating hour belts; and do orally such questions as these: When noon in E. belt, what is the time in R. Mt. belt? It is 10 o'clock a. m. here; I am thinking of a place where it is 8 o'clock a. m. Where is it? Select other work from book.

Seventh Grade—First Semester.

Commence percentage. Review work in common and decimal fractions, involving the principles of percentage. To illustrate: A offers B $\frac{1}{4}$ of a debt if he will collect it. If the debt amounts to $100 how much will B get? If to $80? If to $60? If to $35? If to $18? if to $150? How many hundredths does B get? Express it in the form of a common and a decimal fraction. Now introduce sign % and drill on the three ways of expressing it, as, $5\% = \frac{5}{100} = \frac{1}{20} = .05$; $\frac{1}{2}\% = \frac{1}{200} = .005$; $50\% = \frac{1}{2} = .5$.

Do problems of book. Apply to commission business, loss and gain, and trade discount. Review and do more work in interest, making free use of aliquoit parts in obtaining the rate or the interest. Do not become the servant of a method. Make method serve you.

Teach the writing of different kinds of notes, receipts and checks, emphasizing the salient points. Have pupils write notes, involve partial payments (not more than 2) and settle same. Do work of book. Also in fire and life insurance.

Seventh Grade—Second Semester.

Do work in the following subjects: Measurements, including carpeting, plastering, shingling, lumber in sidewalks, on walls of houses; a review of land measurement; the mensuration of cubes, oblongs (bins), and circles; ratio and proportion; involution and evolution (only square root); and some work in formal analysis.

In carpeting require pupils to make diagram of room and mark strips until process in clear. Make clear allowance for matching and turning under. In connection with shingling study roof of schoolhouse or some other building. Likewise in calculating lumber used for siding.

In ratio find the old friend in direct and inverse comparison of numbers. Use proportion in measuring the height of houses, trees, etc. from ratio of object to shadow.

In teaching involution use this process:

$$(36)^2=(30+6)^2=(30+6)\,(30+6)=\overline{30^2}+\overline{2\times30\times6}+\overline{6^2}.$$

When pupils are sufficiently familiar with process substitute $t+u$ for *tens* and *units*, and use $t^2+2tu+u^2$.

Use this form for discovering the square root.

Do some work in formal analysis, supplementing the text when needful.

EIGHTH GRADE—FIRST SEMESTER.

Do work in the following subjects: Metric system, bank discount, duties, taxes, partnership, exchange, mensuration of prisms, pyramids, cylinders, cones and spheres, and formal analysis.

In teaching the metric system, have the meter, the liter and the gram (make them if necessary) and have pupils make them. Mark permanently a square meter on the floor, and the *are* on the play ground or lawn.

In bank discount do not consider days of grace, there being none in our state.

Explain the object of duties and taxes and in the latter case make plain the manner in which the commissioners determine the rate.

In mensuration relate prisms to oblongs; pyramids to prisms; cylinders to circles; cones to cylinders; the surface of spheres to circles; the volumes of spheres to pyramids. Verify these relations by actual measurement if possible. (Hollow and tin made.)

EIGHTH GRADE—SECOND SEMESNER.

During this semester do all needed review work, giving special attention to business forms, such as the making of bills and receipting them; the writing of notes (different forms: time notes, demand notes, negotiable notes, non-negotiable notes, interest-bearing notes, non-interest-bearing notes, individual notes, joint notes, etc.), checks and drafts, forms for orders, business letters, and the keeping of cash accounts.

Require work in these forms to be done with pen and ink, insisting upon neatness and legibility. In bill making put the pupils in the position of the farmer, the lumberman, the groceryman, the general merchant, the truck gardener, the coal dealer, the commission merchant.

When practicable, do old 8th grade examination questions and teachers' examination questions.

In problem doing, go outside text books and do such local business problems as arise in the community in which you teach.

Endeavor to give the class a connected idea of the processes of Arithmetic.

PHYSIOLOGY.

Section 65 of the Code of Public Instruction, says: "Instruction shall be given in physiology and hygiene with special reference to the effects of alcoholic stimulants and narcotics on the human system." Section 162 provides a penalty in case of violation.

EQUIPMENT FOR TEACHING THE SUBJECT.

The teacher should believe in the work; should show the class that she considers the once-a-week oral lesson in hygiene as important as any period of the week. She should prepare for the recitation by assigning points to be looked up, illustrations to be placed upon the board, items of interest to be given. She should prepare at least one interesting topic herself and give it as her contribution to the exercise. The teacher must not dwaddle over the work in physiology or hygiene. Make it a point to accomplish something in each exercise, and last of all make it *interesting*.

Some illustrative material should be provided, usually by the teacher. If the school has a microscope it should be made use of often. If they have not it might be well to secure funds with which to buy one. A small hand magnifying glass is of great value and costs little. A chart for testing the eyes ought to be provided for every school. A few specimens of skulls of domestic animals, bones of various shapes, also sectioned bones, teeth, scales of fish, feathers, shells of clams, etc., should be included. There should be two or three glass dishes, a fruit jar, a couple of feet of small rubber tubing, some glass tubing, an alcohol lamp. The few chemicals used in the experiments may be obtained from the nearest drug store. The departments of biology in the state institutions are willing to give help. Teachers should feel free to call upon them.

There should be a scrap book kept by the class, into which items passed upon by the teacher may be placed. Have it indexed. Do not hesitate to include a well-executed drawing by members of the class, athletic records, etc. Such a book is a source of great enthusiasm. Be sure to mark modestly on each gift the giver's name. The teacher will find it profitable to keep such a scrap book for herself. Certainly she should keep a note book on the subject. Have it indexed also.

Try to get other texts than the one in use. Discarded books will frequently be contributed. Each book has some special illustration, chart, table or notes of use. Send to the various publishers for their "Guides" or "How to Teach" the subject. These are always cheerfully sent to teachers. Ginn & Co., D. C. Heath & Co., Macmillan Co., American Book Co., publish such guides.

others, and (3) interest in public sanitation. It is difficult, *very difficult,* to impart the facts of hygiene and physiology to young children. They get so many erroneous ideas. One can usually recall one's own misconceptions of the functions of the body. Be always on the lookout to correct wrong impressions. The teacher should endeavor to know as much as possible of the approved data of the subject, for even teachers have wrong impressions about this subject.

Instruction in the first five grades will be oral, fifteen minutes once a week. In the sixth grade the pupils must be provided with a text-book, largely devoted to hygiene. In the seventh grade there must be one recitation each week. It should be largely a review of the sixth grade work with additional illustration. In the eighth grade the subject is one of the important studies, should be taught each school day, and given as much time as any one subject as given in the programme. The outline here does not apply to a particular book, since there are a number of different texts in use in the State. The order of topic here given is one order; the book in use may have another equally good order. Follow the book always. However, the work should begin with some, though not final, study of the cell.

THE ORAL WORK.

The fundamental principle in the oral work is to establish habits of personal cleanliness—clean faces, hands, teeth, ears, bodies, so far as possible clean clothes, clean books, clean desks and though not of this subject, clean hearts and clean lives.

After cleanliness has been impressen, take up as the second important principle, physical exercise. The play and the games belong properly to this division of school work. The teacher should take a part in the games; it is profitable to her and to the pupils. She should be ready to suggest games, and to give aid in their performance. Play is much more important as a health producer than any kind of calisthenics. The latter, however, has a place. This outline can not include a discussion of what exercises are best, but some simple set of exercises which relieves the cramp of seat work, quickens the circulation, allows additional ventilation, and has some life and interest will suffice. There should be games for physical exercise, as the various running games; there should be games of skill, as quoits. Ball games are always in order for the older pupils, both boys and girls.

After cleanliness and games, the object is to teach consideration for others through a knowledge of the effect of disease. There are plenty of opportunities to relieve headache, tooth-ache, to remove the cinder from the eye, to help the crippled or backward ones. Another part of this part of the work is to teach the older ones what to do in emergencies, to give first aid to the injured.

After instruction in cleanliness, games, and comfort and first aid work, comes instruction in the preparation and use of food. Hygiene lessons introduce the average child to the subject of pure food. The

The purpose of the work in lower grades is to establish habits of (1) cleanliness, (2) consideration for the health and comfort of fifth and last consideration in the oral work is instruction in the nature and effects of stimulants and narcotics. The five phases of the subject must be carried on simultaneously, more or less, but in the order of presentation and emphasis, follow the order here given. First, a clean child, then an active child; after that, a child thoughtful for physical comfort of others, then a child careful about what he takes into his body, and last a pure child.

Teach the children what to do in case of accident, how to make a litter, how to put on a bandage or a splint, how to use water and mud in allaying a swelling from broken limbs, how to remove foreign matter from the eye, how to put out clothes on fire, what to give for poison, how to produce vomiting, how to treat a drowning person. These things are much more important than fire drills without, however disparaging the latter.

Find out all you can about pure food and the laws of food production in this State; discuss meat inspection, milk inspection, the devices used by unscrupulous persons to preserve foods by means of injurious chemicals. Discuss factory inspection and employment of children in such places. Get into touch with the local board of health, and find what efforts are being made to enforce laws in reference to sanitation. Get reports from the city and state boards of health; they will help you. Discuss the sources of pure and impure water. If you are able, make experiments with local water supply. Tell children about candy adulterations and about the pure candy movement in New York. Children really need sugar, but in order to get it they many times have to eat a considerable glucose, starch, chemical and vegetable coloring matter and flavor. Teach children how to make and flavor home-made candy. Shoy the harm of gum chewing along with that of tobacco chewing. Condemn quack medicines. Show how most of it is unfit for use, owing its effects to alcohol, opiates, cocaine, etc. Teach temperance in eating and drinking good food.

Teach the nature of germ or contagious disease. Make a list of diseases for which there is a quarantine provision. Let the children tell experiences of quarantine at home or on boats.

Teach children the danger of pulmonary diseases. Especially emphasize the danger of tuberculosis or what is commonly called consumption. It is a menace to society and great efforts are being made in nearly all parts of our country to check its increase. In Greater New York there are 30,000 cases. It is contagious. If you wish information write Health Dept., Fifty-fifth St. and Sixth Avs., New York, and a circular will be sent any teacher. The following is taken from a short circular prepared by the Boston Relief Committee (to be made into a chart by the children):

	Deaths from all causes.	*From Consumption*
Buffalo	14.5 per cent.	1.5 per cent.
Cleveland	17. " "	1.5 " "
Pittsburg	20. " "	1.5 " "
Chicago	16.5 " "	2. " "
St. Louis	18. " "	2. " "
Baltimore	20. " "	2.25 " "
New York	20. " "	2.5 " "
New Orleans	22. " "	3.5 " "

THINGS BAD FOR WEAK LUNGS.

Dust and smoky or dusty places are bad. Dark, damp or crowded rooms are bad. Dirty shops and stores, dusty kinds of business are bad for weak lungs. To sit bent over one's sewing or books is bad. Self-indulgence and intemperance are very bad. Vice which weakens the strong kills the weak.

THINGS GOOD FOR WEAK LUNGS.

Fresh air in plenty prevents consumption. Sunshine kills the germs. Choose sunny rooms. Open the windows and let the air in. Keep the house clean. Be in the open air as often as can be. Outdoor work is vastly better than indoor work. Keep the feet dry. Breathe with deep, long, full breaths, so as to carry the fresh air to every corner of your lungs. Do this always for several minutes in the morning and at night. Breathe through the nostrils, and not through the mouth.

Spend your money for simple and well-cooked foods—good fresh meat, eggs, oatmeal, rice and other vegetables, and for bread and butter, milk, and fruit. Do not spend money for beer or other liquors or for quack medicines, or "cures." Live a regular life, and keep the bowels regular. Get plenty of sleep. Bathe regularly. Keep clean company and a clear conscience. Courage is very important.

Whenever any oue of your family has been ill, or seems weak or run down, build up the strength at once with nourishing food, extra rest, and fresh air. If any one has a bad cold or a cough, and it does not grow better very soon, go at once to a physician. Don't wait till it is too late. The doctor is worth ten times as much to help ward off disease as he is to cure it.

Under the teachers' direction the older members of the eighth grade should at the beginning and near the end of the term examine the eye sight of each pupil. Ask your board to provide you with charts for that purpose. If they do not, apply to your County Superintendent, who will do so. Place the chart where a good light falls upon it. Measure back twenty feet and make a permanent mark on the floor. Place the front of a chair at this mark. Have the pupil sit in the chair with one hand *lightly* over one eye. With the other eye, read the letters, beginning at the top. Let him read until he can no longer distinguish the letters. Note the number of the line in which he began to make mistakes. Write that number under 20

as a numerator, i. e., the child reads line 40 well but fails on line 30; the test is L 20-30, meaning the left eye reads line 30 but with mistakes at 20 feet. Test the right eye in the same way. If a child is found who is very near-sighted, the chair must be moved up to 10 or even 5 feet. In writing results make the fraction read as before, i. e., with 20 as numerator. It is better to test a child alone. With a tape line or string and a watch test the hearing of each child. The teacher will find nearly all children normal in hearing. If any are abnormal it will readily appear.

Habitual mouth-breathing must not be allowed. It leads to various troubles, among which is enfeebled intellect. The children will be greatly interested in weighing and measuring themselves to find whether they are up to the standard of their age. The following table will give a means of comparison:

AGE.	Weight.....	Height.....	Sitting height....	Span of arms.....	Breadth of head...	Breadth of chest..	Breadth of waist..	Girth of head.....	Chest expansion.
Sixteen years.....	116.38	64.45	33.55	66.25	5.95	9.85	9.15	21.55	3.45
Fifteen years.....	103.29	62 25	32.15	63.15	5.90	9.30	8 65	21.45	3.30
Fourteen years...	87.41	59.45	30.70	60.00	5.85	8.95	8.25	21.30	3.35
Thirteen years....	78.32	57.10	29 60	57.50	5.80	8.70	7.95	21.10	3.25
Twelve years	72.55	55.25	28.95	55.30	5.80	8.50	7.70	21.00	3.05
Eleven years.....	64.89	53.10	28.20	53.40	5.75	8.25	7.45	20 85	2.90
Ten years.....	61.28	51.55	27.60	51 20	5 75	8.00	7.20	20 60	2 75
Nine years.....	55.15	49.55	26.80	49.10	5.70	7 80	7.10	20 65	2.55
Eight years.....	50.90	47.75	26.00	47 00	5.65	7.65	6.95	20 55	2.35
Seven years.....	46.85	45.55	25.20	45.00	5.65	7.45	6.75	20.45	1.80
Six years.....	42 62	43 55	24.20	42 60	5.60	7.25	6.55	20.25	1.65
Five years	39 29	41.60	23.60	40 35	5.60	7.15	6.50	20.15	1.35

The above is the anthropometric table for boys five to sixteen years of age, based upon the actual measurement of 5476 school boys. The figures are in inches and hundredths of an inch. For each age the date represents the average boy of that age. This table is taken from Hasting's Manual of Physical Measurements of Boys and Girls (Macmillan & Co.), the most reliable data available.

Myopia is seldom congenital. All experts agree that it is rarely found in children less than five years of age; that it arises from too steady application of the eyes to close objects during school age.—*Cohn.*

"I have examined a great number of Lapps, Calimucks, Patigonians, Nubians, Somolis, etc., but I have never found a single near-sighted person among either children or adults."—*Kotelmann.*

Dr. Cohn found in Germany that in village schools the percentage of shortsightedness is very small, while in town the number constantly increases with the grade of school.

Dr. Smith found myopia to increase as follows, in Chicago schools: Six to 8 years, 4.09 per cent.; 8-10, 5.65 per cent.; 10-12, 10.98 per cent.; 12-14, 12.89 per cent.; 14-15, 16.17 per cent; 15-16,

17.76 per cent.; 16-18, 23.26 per cent.; 18-19, 25.31 per cent.; 19-20, 27.08 per cent.

The result of the examination of over 26,000 cases shows: Near sightedness originates as a rule during school life. The percentage increases according to the length of school experience. Dr. Allport tested 26,696 children and found 8,166 or 32 per cent. with defective vision in some degrees; 6,451 eyes, 20-30; 2,256, 20-40; 1,214, 20-50; 745, 20-100; 447, 20-200; 43 practically blind; 4,472 had eye tire producing headache.

The results of habitual mouth-breathing: (1) A voice without ring—a dead voice; (2) misarticulation of certain words; (3) air to the lungs lacking in moisture and temperature; (4) temporary teeth decay rapidly; (5) narrow alveolar arch and "hatchet face"; (6) hearing becomes dull; (7) poorly developed chest; (8) mental dullness. And this does not include all the ills which result. A mouth- breathing child will take a contagious disease more readily than a normal child. Call upon a nose and throat specialist for help in such cases.

The teeth offer a good opportunity for careful study. They are accessible, and they are so often the cause of suffering that nearly every child from experience can give some information. Provide yourself with various kinds of teeth, carefully marked. It is easy to secure teeth of the cow, sheep, cat, horse, etc. Contrast the teeth of the gnawers with cud chewers, etc. If possible, with a good saw cut some large teeth into two parts—cut some in one section, others in a different section. With a file or grindstone smooth down the rough saw edges. Notice the structure of the teeth. Go to the dentist for a few human teeth, especially those with cavities. Watch the children for loose milk teeth which should be saved for future use. The roots of milk teeth are absorbed, hence there is only the crown left. Watch the eruption of permanent teeth. Do all animals have two sets of teeth? How about the cat, dog, horse, etc.? Sharks, for example, have many teeth, teeth being formed to meet the demand. Have you known of a person who has more than two sets of teeth? Do you know a grown person who still has a baby or milk tooth? Do you know of any irregularities of the teeth? As the jaw of modern man is growing smaller, there is much crowding of teeth. The dentist will explain the term, orthodontia, literally, right or straight teeth.

There is great need for instruction in the care of teeth. Recent investigations in both Europe and America have shown that 85 per cent. of school children have or have had decayed teeth. Milk teeth are important and should not be pulled; they help develop the jaws and permanent teeth. Teach the young child to brush the teeth. Consult parents about bad cases. The Care of the Teeth, by Sam A. Hopkins (D. Appleton & Co), 75 cents, is an excellent book.

Send to A. C. True, Director U. S. Dept. Agriculture, Washington, D. C., for Farmers' Bulletin, No. 142, Principles of Nutrition and

Nutritive Value of Food, by W. O. Atwater. This pamphlet is the best thing in print, and should be in the hands of every teacher. Say you are a teacher and wish the bulletin to aid you in your work. In addition to the above, No. 112, Bread and Principles of Bread-Making; No. 182, Poultry as Food; No. 85, Fish as Food; No. 128, Eggs and Their Uses as Food; No. 34, Meats, Confection and Cooking; No. 74, Milk as Food. Also Circular No. 46, The Functions and Uses of Food, and Care of Food as Related to Its Nutritive Value. All these are valuable and possibly may be obtained at the same time. Write to Director True for list of publications of the office of experiment stations on the food and nutrition of man.

Notice the influence of different foods upon man and animals. The kind and amount of food depends upon (1) age; children requiring more, especially of proteids; old people cannot digest heavy food; (2) climate; note the use of blubber, fruit, rice, etc., in different climates; (3) sex; (4) occupation.

Study the ingestion of food in the case of amoeba. So up the animal scale, noting the increase in complexity of food and the alimentary system. Classify animals according to the kind of food used. Note how plants have been cultivated for man's food. Make much of the work of Mr. Luther Burbank in transforming weeds into useful plants, modifying plants, etc. M. Soyer "assures us that he has from experience made up a scale of food for the day for a period of 60 years, and it amounts to thirty-three and three-fourths tons of meat, farinaceous food, vegetables, etc." Additional interest may be given by discussing the various food cults, vegetarianism, uncooked foods, nut foods, etc.

In 1893 the Committee of Fifty was organized to investigate the liquor problem. After several years of careful study this committee made an elaborate report. The National Woman's Christian Temperance Union took exception to the report, at least to that part which deals with the teaching of hygiene and physiology in the public schools. The committee's report is not accessible to the average teacher, but the reply issued by the W. C. T. U. may be obtained by addressing Mrs. Mary H. Hunt, Boston, Mass. This reply quotes so extensively from the committee's report that one gets a fair notion of its main points. Every teacher should have the reply. No doubt the local W. C. T. U. will be able to supply the paper.

Little is to be gained through teaching the details of the making of intoxicants. It is the nature and effect of the stimulants which must be impressed. The effect of teaching will always rest upon moral rather than scientific grounds. A few experiments of known scientific value should be introduced, but mainly the immorality incident to the use of stimulants should be emphasized. The procuring of narcotics usually leads to (1) secrecy; (2) dishonesty; (3) theft. Their use results in (1) hardening of moral sensibility; (2) indifference to opinions of good people; (3) duplicity and deception —all infinitely worse than the physiological effect of the use of nar-

cotics. The teacher should show the pupils that their use is (1) unnecessary; (2) expensive; (3) dangerous; (4) harmful to growth and strength; (5) immoral. Effort should be directed toward the whole school in order to create a public or school sentiment in favor of cleanliness and decency and against anything low, vulgar, and dirty. Do not over emphasize the use of narcotics to the neglect of bodily cleanliness, regard for the suffering of others, etc. There must be a unity in this work; upon such unity the final results largely depend. It is not the purpose of such work to develop a few extremists, bitterly condemning one form of human indulgence, while violating other principles of hygiene equally important. The teacher may condemn drinking because of its very grave danger but there should always be judgment, consideration and fairness even in condemnation. Be careful not to make statements which the older children know to be illogical! there are enough facts to thoroughly condemn intemperance without exaggeration or misstatement. Dignity in condemnation is a source of power.

The following simple experiments demonstrates all the important characteristics of alcohol. The affinity which alcohol has for water is the cause of the thirst of the liquor drinker. Pour a little alcohol into a clear glass vessel. Note its qualities. Put a little into a saucer and apply a match. Note its manner of burning. Place some white of egg in a saucer, cover it with alcohol. Note that it turns white and hardens. This is due to the fact that the alcohol has extracted the water in the albumin. Alcohol does not have so great effect upon living tissue, but it does take some water even from such tissue.

Put equal parts of alcohol and water each into a vessel by itself. Take the temperature of each by emersing a thermometer; then add the two mixtures and take the temperature. Notice that the temperature of the mixture is higher than the average of the two separated.

Pour some alcohol on the back of the hand or bare arm. Notice that the skin seems cooler, due to the rapid evaporation of the alcohol.

To one ounce of the spirits of camphor add two teaspoonfuls of water. Notice that the liquid at once becomes whitish. The alcohol unites with the water and leaves small particles of camphor afloat.

The teacher's most serious problem is cigarette smoking. Prohibition only drives the boys to the woodshed or other place of concealment, thereby adding greatly to the evil; then it is doubly wrong —physiologically and morally. Moral persuasion is most effective. Sometimes to arouse ambition to own something desirable is to check smoking through the effort to save money for a special purpose. Again, smoking can be controlled through an effort to please the teacher. The teacher should never confine her efforts to a few weak-willed boys, but must attack the problem as a whole.

Geo. E. St. John thinks cigarette smoking is the cause of much of the failures of school children. He finds upon investigation that 2.5 per cent. in second grade, 24 per cent. in third, 45 per cent. in fourth grade, 54 per cent. in fifth grade, 55 per cent. in sixth grade,

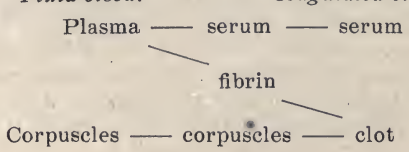
64 per cent. in seventh grade and 55 per cent. in eighth grade smoke, or have smoked, cigarettes. He thinks there is a relation of cause and effect between smoking and dullness or incorrigibility.

BOOK WORK.

The following outline embraces suggestions concerning the teaching of the bones, the blood, the circulation, and the nervous system. The omitted topics are to be dealt with in the same manner: by comparison with the animal, especially those in which the physiological functions are much simpler than in man, experiments by the teacher and the class, the making of charts and diagrams, illustrations from any reliable source.

Bones.—Show the class, (1) fresh cartilage; (2) fresh bone with the periosteum partly removed; (3) fresh bone sawed lengthwise; (4) crosswise; (5) dead or bleached bone. Compare with horn, shaft of feather, bill of chicken, shell of a clam, etc. Distinguish between endoskeleton and exoskeleton. Perform the time-honored experiment of tieing a bone into a knot. Into a pint of water in a fruit jar put 2 oz. muriatic acid. Select a leg bone of a chicken, or the rib of a sheep. Watch the bone to see that acid is not too strong; it may eat the bone. After about four days tie into a knot in presence of the class. Put an egg into a narrow-necked bottle if that will add interest. Burn a bone carefully on a shovel in the fire; this leaves only mineral matter, as the first experiments leave only animal matter. To demonstrate the superiority of the hollow cylinder over the solid cylinder of the same weight, take two similar pieces of heavy writing paper; roll one into a light, close cylinder; roll the other around a piece of broom-stick; which remove. In both cases fasten with a little paste. Stand on end in such a way as to support a teacup. Pour shot into this until the column breaks. The same experiment may be done by supporting the ends, placing a string around the middle, suspending a cup into which shot is placed. Study the repair of a broken bone; the fontanels; the fincus bone. Tell about the binding of Chinese feet, the flattening of the head by certain Indian tribes; devices for strainghtening crooked limbs; explain the principles of osteopathy.

Blood.—The cells of the body need nourishment. As most of them cannot come into contact with the food material, some arrangement must be made by which the food material is brought directly to the cells.. Blood is liquid food; it goes directly to all parts of the body. The following formula (Hutchinson) shows composition:



Get some fresh blood from the butcher or from a family where there is to be a chicken dinner. (Do not allow children to kill animals for the sake of illustrative material.) Put some fresh blood into a watch crystal and let it stand a few minutes. Notice the bright red rim with the dark center. With three or four straws from the broom whip up some fresh blood for three minutes. Notice the thin plasma and corpuscles in the dish and the fibrin gathered on the straws.

Data concerning blood: 7.5 per cent. body weight; 35 per cent. corpuscles, 65 per cent. plasma. Red corpuscles, 65 per cent. water, 35 per cent. solid, the chief of which is hemoglobin, the red coloring matter. Hemoglobin unites with oxygen, which it carries to the tissues where it is given up. The presence of oxygen makes the blood bright red. In one cu. mm. there are 5 billion red corpuscles in the male and 4.5 billion in the female. The number of red corpuscles is greater in higher altitudes. Why? White corpuscles, or leucocytes, have no constant shape; about 10,000 in one cu. mm. (500 red to one white). White corpuscles can pass through the walls of the capillaries into the lymph, a fluid which carries the food material directly to the cells.

Prick the skin with a needle, put the drop of blood on a slide by the side of the cover glass, which has been previously moistened with pure water. By placing the edge of a blotter on the side of the cover glass opposite the drop of blood, the blood will be drawn evenly under the cover glass. Examine at once while there is movement among the corpuscles. Compare the blood with sap in the plant. Is all blood red? Is all blood warm? Notice the blood of lower animals, as crayfish, clam, fish, frog. Can the blood of man be recognized by certain characteristics? Make chart showing proportion of weight of blood to body weight; composition of blood; the relative size of corpuscles of various animals and man.

Circulation.—If possible borrow from the local physician a stethroscope and allow the class to listen to heart beats. Notice systole and diastole. Compare three conditions: 1, quiet; 2, exercise; 3, running. To see the valves of the veins, bare the arm when body has been well exercised, and rub the finger along a vein toward the hand and the knots will indicate the location of the valves.

The movements of the artery in the human body as the pulse-wave passes through it may be shown to consist in a sudden dilation, followed by a slow contraction, interrupted by one or more secondary dilations. In the absence of a sphygnograph, this demonstration may be best made by pressing a small piece of looking glass upon the wrist over the radical artery in such a way that with each pulse-beat the mirror may be slightly tilted. If the wrist be now held in such a position that sunlight will fall upon the mirror a spot of light will be reflected on the opposite side of the room, and by its motion upon the wall show that the expansion of the artery is a sudden movement followed by slow contraction.—*Bowditch.*

Data concerning the circulation: The cardiac cycle lasts about .86 second, divided as follows: 1. Auricular systole, ventricles at rest, .16 second. 2. Ventricular systole, ventricles at rest, 0.3 seconds. 3. Pause, during which both are at rest, 0.4 second. Heart beats per minute average 70, in children, first year 134, increased by fever or excitement. Pressure in the left ventricle three times as great as in the right. Rate of flow: In large arteries, 200 to 400 mm. per second; in capillaries, .6 to .8 mm.; in large veins a little less than in large arteries. The time of complete circulation varies, but it is supposed to be about 22 seconds.

"The entire quantity of blood passes through the heart about three times per minute.—*Jegi.*

Compare the circulation of blood with that of sap. Do all animals having blood have hearts? Note the lowest animals. Are all hearts four chambered? Do some animals have more than one heart? Again notice lower animals, as clam, earth worm, etc.

Respiration.—Respiration is the process by which the oxygen of the air is brought into contact with the cells of the body. The blood carries oxygen as well as food. The plasma slightly absorbs oxygen while the hemoglobin unites with it in a loose affinity, called oxyhemoblobin. In the capilliaries the affinity is easily broken down and the oxygen unites with the tissues to produce body heat.

If the teacher wishes, let her procure a lung from some slaughtered animal, inflate it to its full size, tie, and put away to dry. After it has become quite dry, with a sharp razor cut it into sections. With an ordinary magnifying glass the class can get a fine idea of the gross anatomy of the lungs. A better plan is to get the lungs from a frog and put a very thin section under a low power of the microscope. If a frog is sacrificed, be sure to save the trachea while fresh. cut it open with a pair of shary scissors, spread it apart, lay a small piece of cork on the exposed inner surface. Notice that it slowly moves toward the mouth.

Look up the meaning of apnoea, dyspnoea, asphyxia.

Fill a fruit jar full of water; without spilling a drop invert the jar in water; blow through a short rubber tube for a few seconds while the other end is in the water, then place that end under the jar. Take a breath, hold it half a minute until the air in the lungs has been thoroughly changed; blow the jar full of air from the lungs. Keep the mouth of the jar under the water all the time so that no outside air can enter. Light a twisted paper; when it is blazing well, lift the jar out and insert the burning paper. Notice that the blaze is immediately extinguished as though placed in water. It adds to the effectiveness to put the lighted paper into the jar when full of fresh air and note that the blaze continues for some time. It may crack the jar.

Make some lime water by putting a few small pieces of unslacked lime into a fruit jar filled with water. When dissolved pour off top. Force air from the lungs through lime water. Notice that it becomes milky.

Data concerning respiration: Arterial blood contains 19.2 per cent. O. 39.5 per cent. CO2, and 2.7 per cent. N. Venous blood, 11.9 per cent. O, 45.3 per cent. CO2, 2.7 N. Under ordinary conditions inspired air contains 20.96 per cent. oxygen, .04 per cent. CO2, while expired air has 16 per cent. oxygen and 4 per cent. CO2. The average man inhales in 24 hours about 500 litres of oxygen and exhales 450 litres of CO2. In the average adult the tidal air about 500cc. Complemental air by forced inspiration, about 2500 cc; supplemental air is about 1500 cc. The three together make the vital capacity about 4500 cc. The residual air is about 1200 cc. Adults breathe about 18 times per minute; babies, 40-45; children, 25; young people, about 20.

When the school-room has been closed all day and you know the air is impure, pour some fresh lime water into a plate and set on your desk. Shake it or stir it with a spoon. Notice that it becomes milky. Hint, better ventilation.

Breathe on a cold surface, as glass or iron. Notice the moisture from the breath. Breathe into a jar with glass stop and close it securely. Set in warm place 24 hours; open under the nose. Notice the odor.

Nervous System.—The manifestations of life are: (1) Motion; (2) irritability; (3) assimilation; (4) excretion; (5) reproduction; (6) growth. Without a nervous system the individual cannot respond to the changes in his environment, cannot escape danger, secure food, etc. Notice the simple system of the lower animals; note the appearance of a "brain" as the scale of life is ascended. Note the evidence of segmentation as seen in the special senses and spinal nerves. Learn something of the embryological condition of the human brain and sense organs. If possible place before the class a chicken or sheep brain, fresh and also hardened in alcohol. Secure an eye from the butcher, and especially notice the crystalline lens. Show the class that it will magnify print as will a glass lens. Have good drawings made of parts of the sense organs. Give illustrations of the effect of injuries upon the brain, mapping out the determined areas and functions. Discuss paralysis, paraplegia, descussation, ataxia, stuttering, relation of intelligence to brain weight. . Some large brains are: Cuvier (naturalist), 64.5 oz.; Webster (statesman), 53.5 oz.; Abercrombie (general), 63 oz ; Agassiz (naturalist), 53.4 oz. The average brain weight in Europeans is 49.5 oz. male, 44 oz. female. Discuss idiocy, insanity, intelligence of animals, hypnotism, automatic action, items which tend to broaden the pupils interest in the mind. If the teacher is able, there are many little experiments which may be tried to illustrate the working of the mind. For example, have class of ten to twenty take hold of hands, the teacher forming one of the number. With a watch upon the table in front of you, press the hand of your left-hand neighbor, who presses the hand of his neighbor, and so on around until the teacher receives the signal from the right-hand neighbor. Note the time, measure the total distance, and you have a crude estimate of the rapidity of nervous action. The rate of nervous impulse varies with individuals and conditions. In the same individual it travels from forty to one hundred feet a second. On a package of cards paint red circles, red squares, blue triangles and blue crescents. Select a certain number of cards, say 50 or 100. Shuffle them well and deal

them off into two piles, without reference to what is on the cards. Do this twelve times. Disregard the quickest and slowest record, find average of the remaining ten, divide by number of cards. This tells how long it takes to handle one card. Now perform twelve experiments, separating the cards into red and blue piles; find the time for one card. Again separate into four piles according to form. These give the time of discrimination—a very interesting bit of information.

NATURE STUDY AND AGRICULTURE.

NATURE STUDY.

"I am impressed with the fact that the greatest thing a human soul ever does in this world is to see something, and tell what it saw in a plain way. Hundreds of people can talk for one who can think, but thousands can think for one who can see. To see clearly is poetry, prophecy, and religion—all in one."—*John Ruskin.*

Intelligent observation of his environment, in order to understand it and its relation to himself, is the first object of a child's activities. He must know the concrete before he can make abstractions, and justification is no longer needed for detailed attention to that line of study which not only includes the common facts of every-day life, but which forms the basis of broader scientific investigations. The imperative demand for sound reasoning and accurate judgments cannot be supplied until stupid indifference to isolated facts gives place to active, earnest searching for the universal law of life which governs all expressions of life. Facts are necessary. In Nature Study, we cannot have too many of them, if they are actual absolute truths about nature; but, for a right perspective, they must be so correlated that, like the convergence of lines, they meet at a common point, and prove all nature is one. Methods of instruction must be adapted to the conditions of the pupil and the teacher needs to carefully consider the subject-matter from the child's standpoint and with the child's methods. Nothing false or assumed appeals to children, and without spontaneity and honest, natural dealing with this work, it becomes a mere "tinkling cymbal," stultifying and deadening the eager activities which it is designed to quicken.

Infinitely deeper than outlined scheme of these lessons lies the living central truth of each. Nothing less than finding and applying it to the great life problem fulfills the law, in both letter and spirit.

PRIMARY GRADES.

SEEDS.

Material: Individual collections of seeds common to locality. Keep in envelopes or mounted on cards. Prepare seeds of berries by washing free from pulp, and drying slowly.

Comparison: Form, size, color, covering, uses, value, protection, friends, enemies. Study shape of seed-box and fastening of seeds to walls of box; how arranged, and why? Agencies of dissemination.

From the following list, select and study by comparison as many as the class can learn to distinguish readily. (Add to the list from your locality.)

Garden Vegetables and Fruits: Cabbage, cauliflower, celery, cucumbers, lettuce, carrots, onions, tomatoes, sage, rhubarb, beans, peas, squashes, lemons, mushrooms.

Weeds: Dandelions, thistles, dog-fennel, jimson weed.

Grasses: Timothy, red-top, wheat, barley, oats.

GERMINATION OF SEEDS.

Material: Several kinds of large seeds, preferably peas, and squashes; if possible a good magnifying glass; also, a box of soil found near the surface, and another box filled with earth that has been buried several inches below. Place some of the seeds in dry sand, some in sawdust, some in warm water. Vary position, depth, moisture, and heat of those in good soil. Prove need of water, air warmth, and that earth and light are not a necessity.

Comparison: (Dry and soaked.) Color, size, shape, hardness, scar, opening. Remove coat of each and compare layers. Study crumpled leaves, white point, jelly.

Invert in water a thin glass bottle that has been filled with dry peas or beans, and note the result. Watch for the sprouting of any seeds that may be in the boxes of soil, and discuss how they may have been carried there.

ROOTS OF PLANTS.

Material: Examples of underground stems, and roots, and those found above ground; a piece of turf.

Compare: Tap-roots, bulbs, etc., as to form, size, uses, protection from enemies, nourishment taken from soil. What roots help each other? Hinder?

Study: Potato, onion, carrot, bean, buttercup, etc. Grasses, trees. Show how bulbs may be forced into bloom in winter; how the root feeds.

STEMS OF PLANTS.

Material: Individual collections which may be mounted or preserved for future use.

Comparison: Shape, size, color, smell, taste, sap, age, uses. What enemies? Friends? Keep assortment of uniform length, and review until there is ready recognition of each. Study may be made of those plants selected for preceding lessons, if class need what might be used as review; but if work under "Seeds" and "Roots" has been thoroughly done, it would be better to learn new names while comparing stems.

LEAVES.

Study by one of preceding outlines. Observe needles of pine or

fir, spines of cactus, etc. Show by experiment that leaves give out moisture. Parts of a leaf: petiole, blade, veins. Why change of color? Arrangement?

BLOSSOMS.

Parts of Flower: Calyx (seed-cradle), petals, stamens, pollen, pistil, ovary (seed-basket), seeds.

FRUITS.

Kinds, appearance, parts, use of parts to plant, to man. Brilliant colors of some fruits. Why? Most common color? Which do not change in ripening? Use collection of fruits for class to distinguish by feeling, smelling, and, when cut up in small, indistinguishable bits, by tasting.

TREES.

Parts of a Tree: Roots, trunk, branches, flowers, fruit (that which contains seed). Study evergreen trees in your locality. Different from other trees—height, manner of branching, leaves, buds, cones, etc. Use of resin or gum. Protection of trees. Enemies? Friends? Clear lumber or knotty. Why? Use of leaves? Why do some trees lose leaves?

WEATHER RECORD.

Make chart on blackboard or large sheet of cardboard. Fill record near the middle of day; or find average of both morning and afternoon periods. For direction of winds, let observation be made at intermission and one pupil make observations from window at the time for filing record.

Clouds: Layer, woolly, feathery, black. (For older pupils, third or fourth grades, use the names stratus, cumulus, cirrus, and nimbus, for the cloud forms.)

Weather: Temperature, wind, direction of wind. (Mark with arrow.) Date. Compare for different months.

BIRDS.

Give opportunity to observe, before week of lesson, influences affecting bird life; arrival or departure; nest building; food. Let first lesson not include more than observations made. Later, discuss the bird that had teeth and left its picture in the rocks; why were teeth needed then? Why not now? Compare likenesses and differences of our birds to other animals; animals of flight, egg-layers, etc.; shape of the body of birds and of fish.

Nests: Location, structure.

Eggs: Time for hatching; condition of young ones; care necessary; food, movements. How do young birds learn to fly? Sing? Which get food on the ground? Never on the ground? In flight? Relation of birds to plants; how they help each other.

Food Supply: How can we increase it? Which are carnivorous? Learn kinds of birds in neighborhood, as belonging to one of the prin-

cipal groups. Sparrows, finches, etc. Prepare the way for intermediate work by having clear-cut descriptions given, and quick recognition of the subject.

INSECTS.

Kinds: Beneficial, injurious.

Compare: Habits, size form, color, parts, movements, habitat. Study life history of scale wings; egg, larva, pupa, insect. Collect cocoons in early autumn, keep in cool place during winter, and study in spring.

From outlined comparison, study flies, mosquitoes, ants, aphis. How can neighborhood be rid of mosquitoes? Let class secure specimens of eggs and wigglers from stagnant pools, pails, barrels, etc. Arrange jar with gauze cover and observe moulting. When some have emerged as adult mosquitoes, place a few drops of kerosene on water, and note results. Have aquarium arranged for one minnow. Let class observe while glassful of wigglers is poured in. Which method is preferable? Note differences in animal life found in dark, hidden places and that of the open air. Which insects are scavengers? What flowers furnish food? Compare color of insect and flowers that it visits. When do the brilliantly colored flowers appear? Insects? Prove what can be learned of the senses of insects.

EARTHWORM.

Material: Box of loose, damp soil containing a number of worms. Sometime during the lessons, let the older members of class place in wet dishes enough worms for individual study. Use pieces of glass for covers to dishes.

Observe: Shape, color. Parts: Joints, skin, head, tail, mouth. How does it move? Eat? What is its food? What does it eat? What are worm casts? How do worms benefit plants? Distinguish between larvae of insects, and worms. Note that the latter have *no legs.* Test for seeing, hearing, smelling. Show that sense of touch is perfect.

SOILS.

Material: Handful of sand, seive, piece of granite. Show parts of granite. In third and fourth grades, teach names quartz, feldspar, and mica. Find gravel, silt, etc., in soil. Which is better for plants? Why? What do leaves do for soil? What do roots of plants take out of soil? Show what a drain tobacco is to the soil, exhausting its fertility, "wearing out" the land.

Kinds: Gravel, sand, clay, loam. Influence of trees in affording shade, and protection from winds.

ANIMALS.

General characteristics and resemblances. How they benefit man —form land, prepare soil, remove decayed matter from water and air, protect from insects, scatter seeds, etc.

What manufactured animal products? What animals are fearless; industrious, skillful; persevering; meek; watchful, obedient;

affectionate; sympathetic; unselfish. Discuss instincts of animals to hide; know direction; flee away; know weather; plan; hibernate; migrate. Animals protected—by inconspicuous color; attractive color; shell; odor; sting; pincers; claws; teeth; nose; horns; legs; tail; voice; swiftness. Select domestic animals to observe and study. Where did first originate—habits, structure as adapted to life, care of young; training.

FROG.

Material: Eggs kept in wide, well-aired dish.

Life-History: Egg, tadpole, trace changes to adult condition. Habitat; parts—ears (no outside opening), eyes, pupil of eye. (third eyelid), nostrils, toes (no nails), gills, tongue, skin. Use of colors; use of voice. Why do frogs bury themselves in mud? Live near damp places? What do they eat? Useful or injurious? What about the egg would indicate the intermediate state of development?

FISH.

Any live fish that can be kept for a time; wide dish, four to six inches of water, covered with netting guard. (Only such food as will be eaten entire.) Parts—body, scales, head, eyes, (no lids), gill covers, nostrils, mouth, lips, teeth, tongue, fins.

HEAT.

Evaporation: Show by experiment which air absorbs water more rapidly, warm or cold. What is needed to turn a liquid to vapor? Why is a breeze cooling? How is ice made in warm climates? Ways by which plants keep out wet. Experiment: Balance an uncut fruit by a pared one; observe which loses more. Split open ends of various woody twigs or stems. Note which dries fastest.

...*Absorption and Radiation of Heat:* Heated iron or bar; direction of heat passing off; how radiators heat rooms; what becomes of radiated heat. Hold object near heated iron; examine; how did it get heat? How was heated iron affected by cold object? Effect of surface, color, etc. Why heat tire of wheels, bolts, rivets, etc? Effect or high polish upon a stove, shoes, bottom of kettles. Melting snow —which first, clean or dirty? Why? Effect of clouds upon frost; why will thin cloth protect plants? Observe ground under trees; boards of walks, and nail heads. Where is frost seen? Why?

Conduction of Heat: Effect of touching bare foot to carpet, marble, etc. Blanket or sawdust on ice; fur and feathers to animals; double windows; salt on ice about ice cream; iron handles tipped with wood, etc.

CHRYSTALLIZATION.

Material: Salt petre, bule vitrol, alum, or sugar and common salt. Using separate dishes, dissolve in boiling water, and set each aside for slow evaporation. Strings may be stretched through one of the solutions. By placing single crystals in fresh solution each day, it can be enlarged. Ice and snow crystals; catch snowflakes on black

cloth, note six points. Are they all alike in size and form? Give history of snowflake. Use of snow to plants. Show purity of crystals by mixing solution of alum and blue vitrol. When three-fourths of the water is evaporated from the mixture, dip the crystals quickly into ice-cold water and observe. Why did they separate? On a very cold day, let the effects of freezing be studied. From dish containing vinegar, coffee, or ink, remove frozen crust and note what is left under ice.

INTERMEDIATE GRADES.

FERNS.

Material: As many different kinds as can be found, cut with the creeping rootstock attached. Note spore cases, green dust, etc. When the spores are ripe, place some of the dust on moist earth and cover with glass; keep moist, but not wet. The minute heart-shaped plantlet which soon appears is the first state of fern's history. Observe Maidenhair; stem, color, branchlets, leaflets, rootstock, chaffy scales, spore cases.

MOSSES AND LICHENS.

Material: Individual collections. Study capsules, spore cases, stems. Note variety of location. Discuss value of other plants, and importance of peat mosses to people of north—food for caribou, etc. Compare with ferns.

FUNGI.

Mushrooms, toadstools, puff-balls. How do they grow? Where? Local conditions; differences. Examine umbrella shaped heads of mushrooms; gills, or tubes; spores, tissue. Which are poisonous? Edible? Find mycelium; how remains alive, etc. Make a spore print by fastening mushroom, gills down, on paper, and shutting out air.

MAGNET.

Bits of bar steel, 2½ inches long, maknetized on a dynamo or with a large magnet. Make magnetic needle by using large sewing or knitting needle. Suspend by silk thread. Study dip of needle; positive pole; negative pole; compass; north magnetic pole; cause, use; declination of needle. Test for iron and steel. Show that new magnet is just the opposite of the end that touched old magnet; that unlike ends attract; like ends repel. Make use of needle in determining direction.

LIGHT.

Let pupils make a prism if one is not at hand. Use three equal strips of glass; seal seams with wax and cover bottom with triangular pieces of tin; fill with clear water. Note spectrum on opposite wall of sutiable screen. Colored rays straight or broken? In line with sun light? Distinguish colors. What is meant by luminous body? Non-luminous? Difference in visibility. Why? Good reflector? Compare book and glass; irregularly reflected light, regularly reflected. Primary colors? Why?

PEBBLES.

Individual collection. Assort them with respect to shape, color, material, etc. Where found; distance from water; how deposited—water shallow or deep, running or still. Are pebbles like large rocks found near? Surface; hardness. Experiment with strong vinegar and limestone or pieces of shell. Try pebbles, piece of slate, clay, sandstone. Use of "clean sharp" sand, mortar, cement, etc. Discuss erosion; banks and bed of river, etc. Learn quartz, feldspar, mica; effect of glacial action. Green—due to plants; yellow—presence of iron which has rusted.

CLAY.

Odor, color, hardness; uses, preparation; where found? In red bricks, iron oxide; effect of burning; disintegrated feldspar. Observe feldspar in granite; lustre, hardness, cleavage. Moonstone; kaolin; clay industries of Washington.

MICA.

Observe granite, mica schist, gneiss. Note hardness, structrue; flat, six-sided forms; thin, transparent, layers; distinguish muscovite, or "white mica"; biotite, "black mica." Discuss uses of mica in soil, in commerce.

QUARTZ.

Review crystillization. Study some form of quartz crystal, observing form of drusy quartz, or if possible, the sixsided right prism. Learn forms; as amethyst, carnelian, opal, flint, etc. Colors, hardness, uses.

Observe silica in grass, grain, etc., in pebbles, clay, glass, agates, granite.

LIMESTONES.

Marble: Colors, structure, origin; test with vinegar or hydrochloric acid, proving carbonate of lime. Show carbon dioxide of limestone identical with that used in soda water; exhalations of plants and animals. Pieces of shells, oyster or clam; scale deposits in tea-kettle; lime not soluble when CO2 is gone. Stalactites in Mammoth Cave; stalagmite; effect of iron in water; chalk (not sulphate of lime which is used in schoolroom chalk). White Cliffs of Dover. Manufacture of lime. Limestone in Kentucky. What effect on luxuriant vegetation?

SANDSTONES.

Kinds: Brown, red, light, conglomerates; etc. Which hard? Soft? Why? Grains; fossils, stratification. Cement of iron; silica. Test with acid. No effervescence without lime in cement. Effect of pressure in conglomerates cemented by lime or iron. Let collection be made of as many sandstones as can be found.

SHALES AND SLATES.

Stratified rocks formed in water. Study structure, color, odor, fossils.

Distinguish schist; mica, hornblende, feldspar, chlorite, according to mineral composing it. Thin or thick bedded? Note that shale is found *below* all coal seams.

COAL.

Kinds; weight; luster; color, hardness; odor; flame. Compare peat, coke, graphite, anthracite and bituminous coal. Cleavage, formation; fossils; use of plants. Trace history, from peat to anthracite. Coal mines of Washington, of the world. Relation of coal to petroleum; the diamond.

IRON.

Kinds; color; formation; hardness; uses; value. Where found? Cause of rust; presence in plants; stain of iron on cloth.

CATERPILLARS.

Collect various kinds and fasten in screened cage. Observe: Colors, reason for colors; parts—body, head, feet; rings, covering, simple eyes, jaws, etc. Segments. First segment, second segment—size, color, appendages. Openings for breathing, twenty-two. Warm or cold blooded?

SNAILS.

Shell: Whorls, apex, aperture, operculum. Animal: habitat, habits, food use.

GRASSHOPPERS.

Habitat, habits, food, structure, life-history. Eggs: size, color, shape.

From outline above study cricket or locust. Experiment by keeping some in school room, and note food, amount and kind. Compare with scale wings, and observe differences. Food for all common birds.

BEETLES.

Kinds; appearance, colors, covering, structure, life-history. Study lady bugs, potato beetles, and borers. Where most abundant? Contrast wings of beetle and bee. Are there beetles that do not fly? Examine mouth parts; compare with grasshopper, fly, spider. Find organs of seeing and hearing. Enemies—means of attack or defense. Which are injurious to plants? Beneficial? Useful or harmful to man?

DOMESTIC ANIMALS.

Parts: Body, skin, hair, head, ears, eyes, teeth, food. Habits: Movements, disposition, training of senses. Why difference in movements? Compare cat and dog; horse and cow; how feet are placed in walking, trotting, galloping. Capacity of speed. Observe the legs of rabbits, cats, squirrels, or mice. Which walk with feet parallel? Toes diverging outward? Elect subjects and study from outline, working out reasons for habits noticeable as being peculiar; effects of domestication; value to man; dependence upon man; duty of man to animals.

TREES.

Material:. Twigs, small branches, pieces of wood and bark. Keep twigs in water until study is made of buds. Appearance, branchlets, buds, bark, structure of wood, range. Buds that are naked; covered with hairs; with varnish or resin; opposite buds; alternate. Classify trees according to soil and locality. Where do we find willows and poplars? Maples, oaks, spruce, firs, etc.? Life history of soft maple, poplar, cottonwood, or trees that can be conveniently studied. Annual history—effect of rain, snow, etc.—branches, buds, mark, size, shape.

SNAKE.

Have small snakes in clean glass jars for class to examine.

Parts: Head, scales, eyes, nostrils, mouth, skin, color. Renewing of scales; casting skin; how? Bones, how connected? Food, how swallowed? Observe teeth in single row; shape, points curved backward. Note that poisonous snakes have flat, triangular heads, small necks, and usually thick, stumpy bodies. Eggs: numerous, long, soft-shelled. How hatched? Condition of young ones when hatched.

SPIDER.

Food, juices of insects; hibernates in nests of web. Examine webs; eggs (laid in little bags of web in the cracks of boards, or scales of bark, etc.).

Parts, habits, habitat. Study specimens brought by pupils; note differences between spider and insect; spider and bug. Experiment with spider placed so that it cannot escape but by spinning a web. Distinguish different kinds; jumping spider, running spider, cobweb weaver, orb weaver, crab spider. Interesting notes may be added about trap- door spider and tarantulas of the South.

BIRDS.

Continue work begun under Primary Grades, learning traits, habits, distinguishing features or song birds and birds of prey.

CLOVER.

Kinds: Red, white. Observe differences of corollas, calyx. Find stipules, leaf stalks, keel, stamens. How fertilized? Why by long-tongued insects. Why import bumble bees where red clover failed to set seed? The beginning of a collection of plants should be made in the grades; and with helpful suggestions pupils should be encouraged to press and preserve specimens. By learning characteristics of family groups, and being able to distinguish them, they have a foundation for a strong course in botany.

SHEPHERD'S PURSE.

Examine parts—calyx, corolla, stamens, pollen, pistel, seed case, etc. Shape of corolla, Greek cross, sign of Mustard family. Stamens, 4 long, 2 short. Observe seed pods.

Select twenty subjects found in locality, study and preserve. A press may be kept at school and pupils have charge of the work.

METEROLOGY.

Continue weather record, as outlined, noting local conditions, prevailing winds, cloud forms, etc.

Advantage should be taken of any peculiar specimen that may be brought, to study it while having opportunity. An awakened, interested class find many of these and the course as outlined is designed only to begin that which the live teacher is quick to supplement from her own environment.

Nature Literature:

Whittier's Child Life.
Longfellow's Hiawatha.
Lovejoy's Nature in Verse.
F. D. Sherman's Little Folks' Lyrics.
Mrs. Dodge's Verses Along the Way.
Margaret Sangster's Little Lords and Ladies.
Wiltse's Stories for Kindergartens.
Morse's First Lessons in Zoology.
Directions for Collecting Insects, (free), Smithsonian Institute, Washington, D. C.
Thirty-six Observation Lessons on Common Minerals, Clapp.
Nature Study and Life, Hodge.
Plants and Their Children, Mrs. Dana.

AGRICULTURE.

SEVENTH AND EIGHTH GRADES.

It is not intended that this work shall be merely a repetition of the Nature Study. Wherever a text-book is used, it is recommended that the outline be followed, as given in text-book.

Study of Seeds.

1. How to test seeds. How to preserve seeds so that they will germinate.
2. Germination of seeds in different soils and in different conditions of soil.
3. Amount of seed to be sown.
   (*a*) Relation of amount of seed to size.
   (*b*) Relation of amount of seed to the manner of growth of crop.

Study of Roots.

4. Relation of root structure to soil cultivation.
   (*a*) Whether deep or shallow cultivation is needed.
   (*b*) Whether soil should be pulverized.
   (*c*) Whether much or little moisture is necessary.

5. Relation of climate to crops.
   (*a*) How far are the crops of your section determined? (1) by temperature; (2) by humidity.
   (*b*) Atmospheric conditions in the relation to growing crops.
6. Fertilization of soils.
   Best fertilizers for the crops of your section. Why?
7. Study of the physical properties of soils and their relation to crops.
8. Study of insects.
   (*a*) Which are injurious, and how may their ravages be checked?
   (*b*) Which are beneficial and how may they be preserved?
9. Study of birds (as above).
10. Study of weeds.
   (*a*) Their habitat.
   (*b*) Manner and time of growth.
   (*c*) Structure of roots.
   (*d*) Time of ripening.
   with a view to determining the best mode of eradicating.
11. Trees, etc.
   Grafting and budding.
   Pruning and spraying.
12. Study of plant diseases and parasites.
13. Pollination of blossoms.
   (*a*) What is pollination?
   (*b*) Results of proper and improper pollination.
   (*c*) Comparison of self pollination and cross pollination.
   (*d*) Means of pollination.
   (*e*) Origin of hybrids.
14. Forestry and its relation to agriculture.
   Domestic Animals.
15. Horses.
   (*a*) Draft. (*b*) Saddle. (*c*) Carriage. (*d*) General purpose.
   (*e*) Care and treatment of common ailments.
16. Cattle.
   (*a*) Beef. (*b*) Dairy.
   (*c*) Care and shelter.
   (*d*) Feed. What elements needed in food. Balanced ration.
   (*e*) Relation of care and feed to quantity and quality of milk or meat.
17. Sheep.
   (*a*) Mutton breeds. (*b*) Wool breeds.
   (*c*) *Care of Sheep.* (*d*) Benefit to a farm.
18. Hogs (as above).
19. Relation of domestic animals to other branches of agriculture as carried on in your vicinity.

Teachers should secure for themselves and their pupils bulletins published by the Washington State College and by the Department of Agriculture, Washington, D. C. Pupils would be interested in the instructions for judging live stock, fruits and cereals issued by Washington State College. It is intended that attention be given to the

actual crops in cultivation in the pupil's own vicinity, and not to the theoretical study of crops which he never or seldom sees.

Probably no school will be able to cover every subject indicated. Those subjects most applicable to the agricultural industries of each section should be studied by the pupils of that section.

DRAWING.

DISCUSSION.

Connect all study of form and drawing as closely and naturally as possible with other lines of school work. Encourage especially all attempts at sketching from natural objects. If a drawing is distinctly bad, try to cultivate more thoughtful observation. The trouble is most likely to be a mater of imperfect observation. Have all drawing entirely freehand, allowing no use of rulers for straight lines. Use eraser as little as possible. The object is not to get perfect results, on paper, but to train senses, mind and hand to work together.

Make an effort to have good pictures on the walls and encourage children to study and discuss them.

Encourage children to observe beautiful and appropriate forms in everyday objects, furniture, household belongings, etc. Start them in the habit of noticing how things are made and appreciating what is especially well designed as to form and color.

OBJECT DRAWING IN THE PRIMARY GRADES.

The most effective means of teaching drawing to primary pupils is by example. The teacher must lead, not push; must draw, not talk; show how by doing, not explaining. How does a boy learn to swim? (1) He sees other boys swim. (2) He wants to swim. (3) He tries and swims. It is the same with flying kites, playing marbles, jumping the rope, riding a bicycle, etc. They see; they have the desire; they learn. Your pupils will learn drawing precisely the same way if they have the opportunity.

Procure some simple objects, any simple form will do; leaves, box-elder, seeds, simple flowers, etc.

(1) Give an object to each pupil and ask him to draw it on his slate or tablet. Let the pupils begin work immediately. Teach them to hold the object in one hand between the thumb and forefinger in an easy position, to look at it and then draw, then to look again and do the same. The *try* is what you are after, not the drawing. (2) You step to the blackboard with the object between your thumb and forefinger and draw it on the board. Don't talk, don't explain; don't say a word; simply draw, and bright eyes will do the rest. Your drawing is not for them to copy, but to show how, to lead, to encour-

age. The pupils see how you draw, see the drawing on the blackboard and try to do likewise. To be sure there will be more or less copying of your drawing, but never mind, this is a tendency inborn in the human race and is a force that will serve you well if rightly directed, so when looking at the drawings of each do not judge harshly those who have copied your drawing, but lead them to draw what they see; to draw their own object and to use soft lines.

Turn the object over and draw it. There is no reason why pupils shquld not draw from two to six objects in one lesson, and draw each as well as if only one were drawn. Slow, laborious drawing in a class of little ones is not desirable.

OBJECT DRAWING IN THE GRAMMAR GRADES.

How to Collect Objects.—Do not ask your pupils for objects in a general way, but be specific. Suppose you have twenty pupils, and tomorrow wish potatoes for each pupil, ask "Who will bring twenty potatoes tomorrow for the class in drawing?" From those who volunteer choose one and hold him responsible for the twenty potatoes on the morrow. Write on the blackboard a list of objects you want and ask each pupil to pick out an object that he or she can bring to school. Charge each pupil with the object he agrees to bring, and hold him to the charge until the debt is paid. A good collection of objects for drawing is very desirable.

The following objects that are generally suitable and procurable for drawing:

Summer and Fall Objects.—Box-elder seeds, milk-weed pods, ear of corn, head of wheat, peach stones, a squash, chrysanthemums, asters and sunflowers.

Winter Objects.—Pine cones, birds' nests, wasps' nests, cocoanut, banana, lemons, leafless trees, etc.

Spring and Summer Objects.—Buds of various plants, catkins, leaves, grasses, roots, dandelions, pansies or violets, apple, peach and cherry blossoms, crocus, radishes, strawberries, etc.

Old, Worn and Broken Objects.—Bowl, teapot, pitcher, jar, jug, oil-can, lamp, candle stick, bottle, bucket, keg, waste basket, berry basket, umbrella, hat, baby's shoes, rubber overshoes, faucet, book, roll of paper, broom, skates, blocks of wood. Mounted birds, animals or reptiles are also good objects to draw from. Some small objects suitable to hold in one hand and draw with the other are: A key, fish-hook, scissors, top, knife, buton-hook, nail, screw, corkscrew, toothbrush, padlock, buckle, spool.

Group of Objects.—Hat, gloves and cane or umbrella; plaster of paris models; teapot, cup and saucer; pitcher and glass or mug; vase with a flower; basket of fruit; pumpkin cut in half; loaf of bread, bowl and pitcher; group of fruits; candlestick and book; pail and scrubbing brush; oil-can, paint pot and brush.

Use and Placing of Objects.—If the objects are small, it is best for each pupil to have his own object. This can be very easily managed with such objects as leaves, buds, twigs, flowers, fruits, etc. It is not necessary for the pupils to have the same kinds of objects; each may have a different object and not at all interfere with the effectiveness of the class. The most effective way of placing large objects such as those under the head of "Old and Broken Objects," is to procure boards about a foot wide; place these across the aisles and place or group the objects in the middle of the board. In this position from twelve to fourteen pupils can see the objects plainly. Do not ask a large school to draw from one object placed on the teacher's desk.

How to Draw Objects.—If the object is long and slender, first draw the medium line; second, with the unaided eye, choose points of prominence; third, roughly mark in proportions; fourth, finish.

When an object consists of one large part and several small parts, first, draw with light lines the large part; second, add the smaller parts to it; third, finish. For instance, when wrawing the human head, do not begin with the nose or face, but draw the head first, and to the head add the smaller parts. The recognition of the shape of the whole or part of the object is of great aid in drawing. For example, in drawing a cat siting down, recognize that the shape of the body of the cat is oval; the head round, and the ears triangular. This simplifies the drawing of it. These familiar shapes are quite common in objects if you will but look for them, and when recognized are great aids in getting the proportion.

One of the best methods of drawing irregular-shaped objects containing considerable length and width, such as a hat, or shoe, is to first take the length; second, find the width and block out the size with light lines; third, find and mark the prominent points; fourth, finish. Almost any point may be judged very accurately if the mind is concentrated on that point. We fail when we try to take in two or more points at the same time.

When drawing a group of objects such as named under the head of "Groups," first choose a prominent point; second, from this point locate several surrounding points with the unaided eye—the drawing of light lines from one point to another is a great aid in locating these points; third, lightly sketch in the shape of the objects and locate the detail; fourth, finish.

Drawing Box-Shaped Objects.—The object should be at least three times its height away from you; it may be further away than this, but if nearer the object will appear distorted.

Measuring.—Procure a box (a crayon box is an excellent model) and place it before you; hold your pencil at easy arm's length away; close one eye; let the upper end of the pencil correspond with one corner of the box, and with your thumb mark the other corner; this gives a unit with which to compare other lines. In order to learn

how to measure make several measurements of lines and compare them. In making measurements care must be taken to keep the pencil the same distance from the eye and not let the pencil slant or recede in the direction of the object. The pencil must be kept at right angles with the arm at all times. This is the most important point in measuring, and it must be observed. The general process of drawing box-shaped objects is as follows: First, draw the nearest vertical line; second, find the remaining vertical lines; third, find the courses; fourth, finish. First step: Place the object in position, draw the nearest vertical line any length you wish; this line (line 1) when drawn, becomes the unit of measure of all other lines in the drawing, and determines the size of the picture. Second step: Find the position of vertical lines by comparing the length of line 1 with the horizontal distance between other vertical lines, and make the same comparison in your drawing. Draw the vertical lines lightly and of indefinite length. Third step: To find the corners, hold your pencil horizontally and pass it up line 1 on the object, not on the drawing, note where it crosses the corner, that is, how far above the botom or below the top of line 1; mark this point in your drawing on line 1, and from this point draw a light horizontal line to intersect the vertical line drawn in the second step (which is line 2). Where this line crosses line 2 it will mark a corner; find other corners in the same manner and draw lines from foot of line 1 to points of intersection. From top of line 1 draw lines parallel with last mentioned lines and your drawing is complete. Any known point may be found by finding how far to the right or left and how far above or below it is of a given point in your drawing. For practice draw boxes at the right of the eye, at the left, above, below, above and to the right, below and to the left, etc.

In drawing a house, barn, shanty, shed, cabin, tent, etc., look at it as a box with a roof added to the top. In general these objects may be drawn as follows: First, take the nearest vertical line; second, find other vertical lines as in the case of the box; third, find the corners; fourth, locate the detail and finish.

MUSIC.

A musical education can be gained only through the use of the best music. A pupil will grow best in knowledge of musical elements through the recognition of his faculties in the order in which they are developed, viz.: from intuitional mental activity to reflective mental activity.

1. Musical experience should be the beginning of musical knowledge; to make it plain, a child should learn by ear a great many good, attractive songs, and be able to sing them well with the proper expression before he is taught the problems that enter into the composition of the selections used.

2. The child's first study of musical problems should be based on the songs that he has already learned in his earlier work.

3. The best songs make the best basis for the child's study, no difference whether it be work in the lower or more advanced grades.

4. A music course based entirely on the scientific relation of musical elements to each other is incorrect. The correct way to teach a child to sing is by singing. Do not set him to learning a numbed of musical problems, such as the relation of keys and the building of scales, but by beginning with a number of songs embodying the elements desired to begin with.

When a pupil has acquired a sufficient amount of skill in singing, the staff should be introduced by drawing it upon the board, using it as an aid in singing any song that he may know. The correct way of studying musical problems is to encounter them in singing and studying. In music training the child's knowledge of elements should be gained by studying them in relation to familiar songs containing them and not by comparing them with elements which they scientifically resemble.

By familiarizing a child with musical elements as heretofore pointed out he gains a musical knowledge of the different elements of music and his singing will consequently be musical and artistic throughout. In a word, the way to master the difficult problems of music is to become familiar with them through musical experience. This is the only correct foundation for musical knowledge.

The next step is to study them in their musical relation to other problems that are similar to them in mathematical and tonal construction.

Music has two distinct phases: The spiritual side, which brings out all that is beautiful and artistic in the art of music, and the formal side, which is definite and exact in the extreme.

These two phases are so related that one, in order to have a thorough education must have an abundant experience in each.

First of all, in the beginning of a child's musical education, the songs should be sung as art forms. The child should sing with the greatest freedom and in a very natural manner. He should not encounter any of the formal characteristics of music until after being in school at least three months and even though he is led to execute his tasks in an exact manner as to tone, length, etc., his work should not apparently partake of this phase.

Although his work should be absolutely correct it should not seem to be following any of the firm rules that must necessarily be applied. Therefore, the work of the first few months must be purely imitative. Much depends on the start that a child gets as to whether his later work will be successful, and this is especially true in music. In choosing songs and music material the teacher might well observe the following suggestions: The words and the music should be of the very best recognized quality. The sentiment of the words should largely be something that will appeal to the child and be child-like in character. Nature, season and home songs should make up the larger number of selections. The compass of all songs or exercises should be within easy reach of the child's voice from the lowest to the highest tones. Any strained tone productions are harmful.

When singing without an instrument, as is usually the case and should be, the sound of "one" of the scale should be given frequently from the pitch pipe, in order to keep the pupils on the pitch. Do not allow boisterous singing, as it is an injury to the voice and destroys the proper production of tones. Insist on a light, free quality of tone.

Owing to the fact that a limited space has been allotted to the subject of music in this manual, only the briefest kind of a suggestive outline of work can be given.

First Year.

The work is begun with imitation singing and carried through the entire first year. At times a few elementary facts regarding the scales, tones and time may be taught as a part of the songs sung, or as independent facts, but great care should be exercised not to undertake anything that is beyond the grasp of the pupil. For example, the scale may be sung as an exercise or a song, using the scale names 1, 2, 3, 4, 5, 6, 7, 8, the pitch names A, B, C, D, E, F, G, A, and the syllables do, re, me, fa, sol, la, se, do. This exercise may be applied to the songs instead of the words learned.

The child should be taught during his first year to observe the rhythm of his song work. This will be an easy and simple matter and it will be found that he will respond to this more readily than to scale or interval singing.

The work of the first year should consist of learning about fifty well-selected songs, on an average of five a month, ear-training, singing the scale and intervals, learning to find the key-note, note divi-

sion of songs into phrases, note and mark the accented and unaccented beats of a measure. No book should be placed in the hands of the pupil during this period.

SECOND YEAR.

In a well-graded school a book may be placed in the hands of the pupil at the beginning of the second year, but in a school not closely graded the book should be withheld for another half year.

1. Continue singing songs by imitation.
2. Review the songs of the first year, after which new ones may be taken up. About twenty or twenty-five songs should be learned by rote during this period.
3. Study songs and technical forms.
4. Study the staff.
5. Sing the simpler elements of the songs in connection with the songs of the previous year, but making more definite observations.
6. Notation—that is, eye training.
7. Writing phrases or simple songs from memory.
8. Reading music from staff notation and inventing simple little melodies.
9. After about three months' singing and practice in this period a beginning should be made in sight reading by giving the pupil some simple song or exercise in connection with any of the four keys of sharps. The work of the teacher will be to gradually develop the independent power of the child so that he may attack work constantly increasing in difficulties.

THIRD YEAR.

1. Review previous work thoroughly.
2. Introduce new rote songs; about twenty during the year. These songs may be used in connection with related study.
3. Sight reading. A large part of the work of this year should be devoted to sight reading; about thirty or thirty-five songs or exercises should be used according to the ability of the class.
4. The work of previous years relative to observation, eye and ear training, following the notation of familiar songs, writing simple songs from memory and inventing simple exercises should be continued.
5. Study of keys continued and completed.
6. Study of the value of dotted notes.
7. Teach the divided beat; the unequally divided beat.
8. A study of sharp 4 should be made.

FOURTH YEAR.

1. Reviews of previous years should never be omitted.
2. Learn a few songs and exercises by imitation.
3. Compare and analyze songs and technical forms.
4. Sight reading. More than ever before the child's attention is directed to sight reading, and song study except as he sings familiar songs for the sake of properly balancing his musical development.

5. Take up about two new songs each month. Songs that will introduce new and more difficult problems each time.

At the end of the fourth year pupils should be able to read at sight any simple exercise in any of the nine keys, the work of the chromatics being left for the grammar grades with the exception of sharp 4.

In the grammar grades the child is directed largely in the study of songs, but the teacher must always be on the alert to detect anything in the work that has a tendency toward the mechanical in time to arouse the true musical spirit by recalling familiar songs and singing them over again as a standard of correct musical expression.

Never lose sight of proper expression and shading, which makes music all that it really is. It has been said that "music is frozen poetry" and without proper interpretation it must remain so. Not less than thirty-five of forty songs should be studied in each one of the grammar grades besides other work as more specifically laid down in this outline.

Fifth Year.

1. Review work of previous grades.
2. Continue sight reading with more difficult selections leading into.
2. Chromatics. An abundance of songs and exercises should be selected for this study.
4. Transposition. Simple exercises.
5. The study of triplets, ties, slurs.
6. Meaning of musical terms.
7. Definitions.
8. Simple two-part exercises taken up.

Sixth Year.

1. Reviews.
2. Sight reading.
3. Transposition of more difficult exercises.
4. All necessary musical terms and definitions.
5. Any two-part songs to be sung.
6. All rythmical and tonal problems should be carefully reviewed, studied and analyzed, including the divided beat, the unequally divided beat, the beat and half note, twice divided beat, tie, slur, triplet, chromatics, etc.

Seventh and Eighth Years.

All that has been suggested for other grades should be carefully considered as applicable for these periods, and especial stress and attention should be given to really artistic production. Carefully watch the expression, tone quality, shading and all such points as lend to the proper interpretation of the songs.

The songs selected bay be one, two or three-part singing. Good judgment should be shown in the use of the bass clef, that all tones are easily within reach of the pupil's voice, not allowing any strained efforts either in range or in tone production.

MANUAL TRAINING.

"Education comes through what the child does, and says, and thinks, and feels in the presence of the environment which the teacher supplies. The teacher teaches the child; the child educates himself. In being taught, the child is passive; in being educated, he is active. The thing to be stressed is that teachers educate more, even if to gain the time necessary for it they have to teach less. Education is self expression not impression alone. Every impression made by teachers upon pupils should be followed by expression in some fashion from the pupils."—*"Philosophy of Education," Herman H. Horne.*

1. School work should be so planned as to strengthen the foundations of community life.

2. Both mind and body should be actively employed in education.

3. Expression subjects, such as writing, drawing, music, handwork, etc., should as far as practicable be used in expression and not isolated from other work.

4. While the development of the subject matter is secondary to the development of the child, the logical unfolding of the same is an important means to the child's development.—"Course of Study," *Nettie A. Sawyer, Primary Supervisor, Seattle.*

The following outline is only suggestive. The wise teacher will follow it only so far at it will, for her school, fulfill the underlying principles given above. This course has been planned considering the logical sequence of the subject and the best adjustment of the subject to the developing child.

MEANS.

As to means, the whole subject is in an experimental stage. The consensus of opinion is to carry on all elementary handwork in the regular class-room so long as the material and equipment will permit, and have the regular teacher teach this handwork. There are two good reasons for this:

1st. The cost of maintaining a separate room with special equipment in every school is too great in the present adjustment of school expenditures.

2nd. The purpose of the handwork, in the lower grades particularly, is the opportunity it offers for expression; hence closer and more real correlation is possible with one teacher in the regular class-room under present conditions.

At the present time the division is made in most public schools at about the fifth or sixth grade when bench work is introduced. The age and size of the pupils is about right to handle larger tools and to be able, unattended, to pass in groups from the school to the shops or cooking room. The chief objection to working at a bench with bench tools or attempting any work in cooking earlier than this,

is the difficulty of providing the equipment and organizing the school for it. Consequently in many of the cities and larger towns the boys in the above grades leave the class-room for the shop and special teacher and the girls remain to take up sewing with the class teacher.

METHODS.

As to methods, the adjustment of any handwork to the public school has met with most success in giving it, for the convenience of organization, a definite place in the school programme, and devoting a specified time to teaching the manipulation of form side of the handwork, while not forgetting the content side, and the relation the result of this activity has to the school life of the pupil. In a small school the opportunity is much greater for a closer relation between form and content, and the handwork can more easily be made the expression of a dominant interest arising in nature study, literature, geography, history, arithmetic, etc., and all the child requires to know of the "how" of the handwork may be taught at such a time.

TIME.

The time given to handwork and drawing should be about one-seventh to one-tenth of the total time of the school session in the first eight grades, and the major portion of this time, in the first four grades, should be given to such forms of handwork as are based upon the work in history, nature study, geography, English and number work. In the high school about one-fourth the time required of the pupil, who elects it, is given to drawing and manual training. The organization of the present-day High School, with its various courses and electives, is largely responsible for this time division, though the nature of the work, its greater technical values and requirements, naturally demand more time of the pupil. The time divisions given above are only suggestive and should vary with the school conditions.

FORM.

The form of handwork possible for the elementary grades is only limited by school conditions and the skill of the teacher. Any material capable of being manipulated by small hands and with such simple tools as the pencil, brush, scissors, needle and paste brush and that has relative values is good.

The following outline is the one recommended for use in the common schools of King county by former Supt. W. G. Hartranft.

It will be noted that the motive back of the handwork given, comes from the other subjects of the course of study—literature, history and nature study. For example, the things made in teaching sewing are expressions of the study of history, the doll house being the center of interest to acquaint the child with the significance of the home interests.

GRADE.	MANUAL TRAINING OUTLINE.
FIRST.	Paper folding and cutting. Sewing: Hemming, running blanket flannel stitches. Make curtains, bed spreads, table covers for doll house. Braiding raffia hats, belts, mats, covering pasteboard with raffia. Weaving wools, raffia into rugs. Story of wool—use of shepherd. Manufacture of wool. Industry of year—doll house. Designing—wall paper, rugs, furniture. Clay twice a week. Drawing daily.
SECOND.	Raffia tying, bags, hammocks. Weaving raffia warp or wool into rugs, hammocks. Story of wool. Sewing: Hemming, running, basting, gathering, overhand stitches, flannel stitch. Designing—rugs, garments. First idea of drafting given. Industry—dressing a doll. Clay twice a week. Drawing daily.
THIRD.	Raffia. Making coiled basket or lunch box. Weaving—rag rug. Sewing: Hemming, running, basting, overseaming, gathering, sew on loops, linen hem for handkerchief, darning, mending. Story of cotton—what is a square. Drafting—first lesson in drafting. Designing—basket, rug, garment. Industry—dressing a doll. Clay twice a week. Drawing daily.
FOURTH.	Raffia—basket, belts, hats, bags. Sewing: Hemming, running, basting, gathering, button hole stitch, gingham pillow worked with raffia, darning, mending. Story of flax—thread. Weaving wool or rag rug. Drafting—parallelogram, composition. Industry—making apron for sloyd work, bags, to utilize stitches taught. Designing—basket, rug. Drawing daily. Clay wood work. Construction once a week.
FIFTH.	Wood work: Construction, decoration, carving, pyrography. Story of tree. Sewing: Essential stitches for garment making, linen hem, darning, mending, outline stitch, sew on buttons. Basketry raffia and reed. Weaving wool into rug, raffia into pillow, hat. Drawing twice a week. Clay once a week. Designing—basket, rug. Drafting—parallelogram, first garment.
SIXTH.	Like above with addition of bent iron work.
SEVENTH.	Wood work: Construction and decoration. Evolution of tools. Sewing: Essential stitches for garment making, linen hem, felling, hem-stitch, darning, mending. Raffia, basket, pillow, hat. Designing—basket, pillow, wood work. Weaving—card cases, purses. Book binding, construction. Drawing—clay. Result of year's work—some completed garments, drafted and made by pupils.
EIGHTH.	Wood work: Construction, decoration. Evolution of tools. Sewing: Essential stitches, French seam hem stitch, button hole, darning and mending. Raffia, basket, pillow, hat. Designing—basket, pillow, wood work. Result of year's work—a completed garment. Bead work: Weaving silkeline into purses, calling cases.

As a help to teaching this course and understanding how and what to teach and how much it costs, the following suggestions are given:

All of our state schools are now offering Summer Courses in the forms of handwork here given. An attendance of one or two terms would give an able teacher a good working knowledge of the handwork here outlined.

The following books will be found particularly valuable for instruction in the subjects they cover and give in most cases full details as to material and method required:

"The Place of Industries in Elementary Education," by Katherine Dopp. The University of Chicago Press, $1.00.

This book does not give a course of work, but deals with the underlying principles of handwork in the grades. "Instead of numerous and narrow lines of often unrelated and specialized work, we have here an appeal for the recognition of the physical and psychical characteristics of the child, with its instincts and tendencies interpreted through the experience of the race."

"Social-Industrial Education," by Wm. A. Baldwin. Milton Bradley Co., $1.50.

"This book does not deal with courses of study, but deals with the problems that have presented themselves at the Hyannis, Mass., State Normal School, with suggestions as to possibilities in the various handwork processes." Hammock making, basket work, clay modeling and school gardens are some of the forms of handwork dealt with in detail.

"The Normal Seminar," June, 1905, published by the State Normal School, Cheney, Wash.

This number gives the syllabus of the course of study for the training school. It is rich in suggestion for correlation and will be of great help to any teacher in all branches of the curriculum.

"Industrial Work for Public Schools," by Holton & Rollins. Rand & McNally Co.

"Primary Manual Training," by Caroline F. Cutler. Educational Pub. Co., Chicago.

The above are very good books of direction in detail, for the work covered.

"First Years in Handicraft," by Walter J. Kenyon. Baker & Taylor Co., New York, $1.00.

Gives work in paper and cardboard for pupils from 7 to 12 years upon a very economical basis.

"Plan Book Paper Cutting," by Minnie George. A. Flanigan & Co., Chicago, Ill.

"Cardboard Construction," by J. H. Tryon. Milton Bradley Co., $1.00.

"A suggestive course of forty models of useful articles designed for use in the fourth and fifth grades."

"Raffia and Reed Weaving," by Knapp. Milton Bradley Co., San Francisco, Cal.

"Practical and Artistic Basketry," by Laura Rollins Tinsley. E. L. Kellogg & Co., New York, $1.00.

"A compact and helpful book for teachers. It contains an outline of a course in basketry for the elementary schools."

"Basketry," by Luther Weston Turner. The School Arts Book (monthly) of April, May and June, 1905, 14c per copy. The Davis Press, Worcester, Mass.

The directions are very close and concise and unusually well illustrated.

"Hand-loom Weaving," by Mattie Phipps Todd. Rand & McNally, Chicago, Ill., 90c.

Modeling

"Social-Industrial Education," at the head of this list, gives directions for clay modeling in a chapter on that subject.

Bent Iron.

A reprint of an article by Henry Turner Bailey that first appeared in the School Arts Book, and is now distributed in an attractive booklet by Chandler & Barber, 124 Summer St., Boston, Mass.

Sewing.

"The Art and Practice of Needle Work," by Catherine F. Johnson. D. C. Heath & Co., Boston, Mass.

"Mrs. Woolman's Sewing Course." Ginn & Co., Boston, Mass.

Drawing and Design.

"The Annotated Outlines," given monthly in the School Arts Book, Henry Turner Bailey, editor. The Davis Press, Worcester, Mass., $1.00 per year.

This little book should be in the hands of every teacher in Washington.

"Text-Books of Art Instruction" (new series). Prang Educational Co., 113 University Place, N. Y.

"One book for each grade. Very fully and beautifully illustrated in black and white and in color, the illustrations accompanied by text to be read and studied by the pupil and adapted to his age and capacity."

BENCH WORK.

All the handwork given in its course, except bench work, can be carried on in the regular class-room by the regular teacher. Bench work requires a special room and well-trained teacher. There is not at present any book that covers the methods and material of a course in bench work satisfactorily. "Bench Work in Wood," by F. M. Ross, Ginn & Co., and "Working Drawings of Models in Sloyd," Gustaf Larson, Boston, Mass., give a graded series of models or exercises.

It is not wise to attempt bench work without a skilled teacher. Such a teacher plans his own course to meet existing conditions and should not be limited to a set course of models.

MANUAL TRAINING EQUIPMENT.

Bench work for the sixth, seventh and eighth grades and first year High School.

The accompanying drawing of a model manual training room and its equipment and the specifications of furniture, tools and supplies are made as definite suggestions for the proper equipping and establishing of bench work in the public schools.

SCHOOL EXHIBITS OF HANDWORK

AT THE

LEWIS AND CLARK EXPOSITION

The accompanying engravings are from photos taken of the different school exhibits from the State of Washington at the Lewis and Clark Exposition. They illustrate the different forms of handwork outlined in this course, and also show in a measure what is being done with handwork in different parts of the State by interested teachers. Every exhibit had some handwork in it, and much that was exhibited had a real relation to the work of the school.

WEAVING AND BASKET MAKING

SECOND AND THIRD GRADES, SEATTLE

Designs are original, and dyeing done by the children from roots and berries

Correlation with History and Language and Drawing

BENCH WORK

SEATTLE AND BALLARD

Small tables and screens, seventh and eighth grades, Ballard

Chairs, large table and lamp, seventh and eighth grades and High School, Seattle

WEAVING, PASTING AND CUTTING

First Grade, Ballard

Original valentine designs, given as language lessons before St. Valentine's Day

BENCH WORK

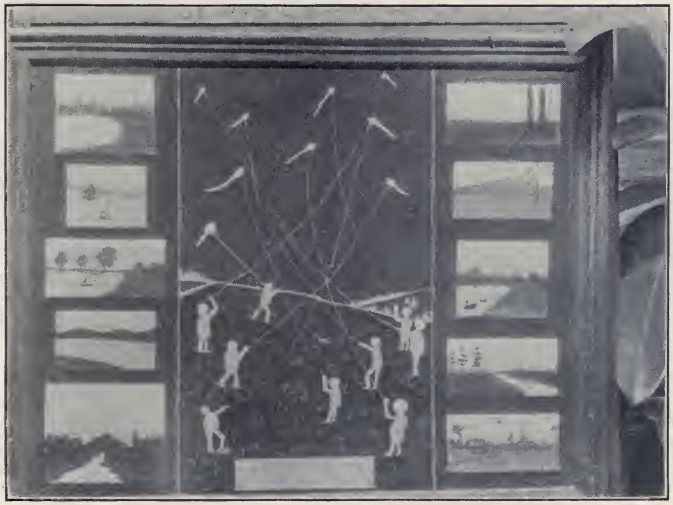
Seventh and Eighth Grades, Spokane

Mr. O. L. Whitcomb, Supervisor

BENCH WORK

SEVENTH TO EIGHTH GRADES, WAITSBURG

Chair, table, stools, etc.

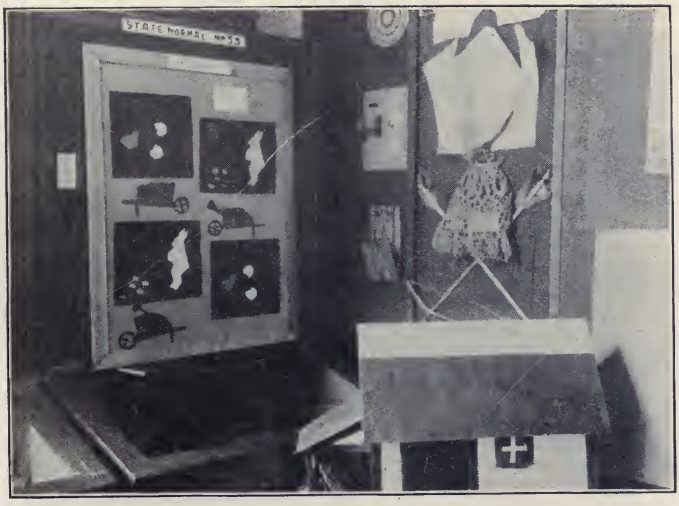


PAPER CUTTING AND BRUSH WORK

FIRST AND SECOND GRADES, CHEHALIS

SUGGESTIVE HAND WORK
ELEMENTARY GRADES, WALLA WALLA

DOLL CLOTHES AND FURNITURE—HANDWORK
THIRD TO FIFTH GRADES, CLARKE COUNTY.



PAPER CUTTING

FIRST GRADE, ELLENSBURG NORMAL

The figures are cut out of the black paper and colored paper pasted on the back of the opening; outgrowth of language work. Barn of card board. Group work in the Kindergarten work on the wall, the outgrowth of Thanksgiving work.

CLAY MODELING, WEAVING AND SEWING, BARK BIRD HOUSES

FIRST TO FOURTH GRADES, TACOMA

All material supplied by the pupils

SEWING SAMPLES

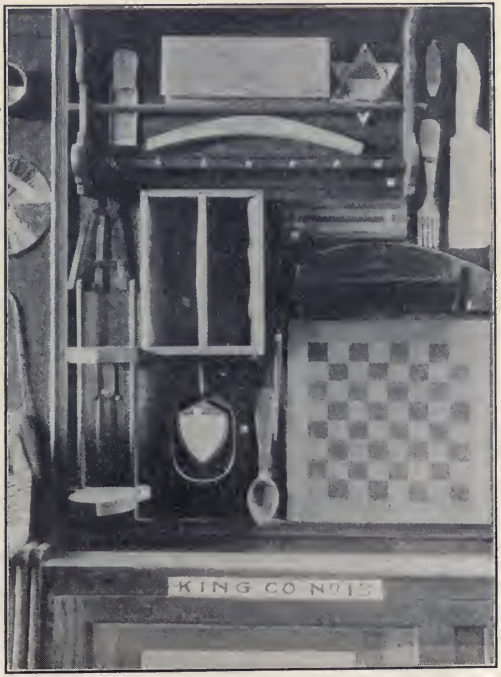
EIGHTH GRADE, SEATTLE

PLAY HOUSE

THIRD GRADE, HOLMES SCHOOL, SPOKANE.

BENT IRON, DECORATED CLAY MODELING AND CARD BOARD, WOOD CARVING.

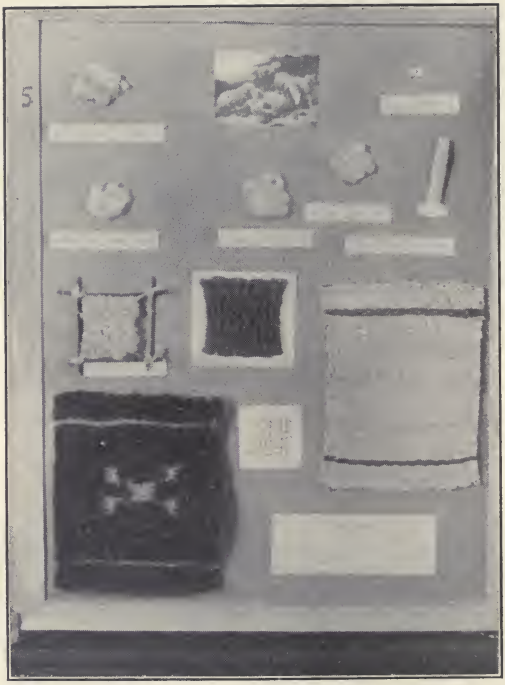
STATE NORMAL, BELLINGHAM



BENCH WORK

SIXTH, SEVENTH AND EIGHTH GRADES, GEORGETOWN

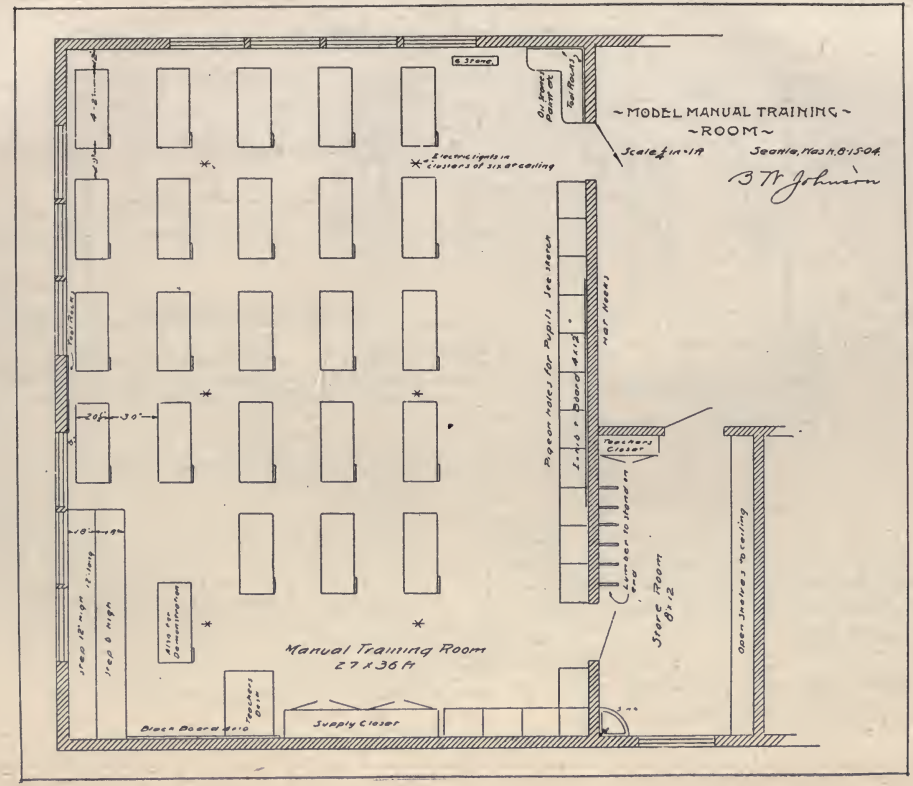
Miss McCormack, the teacher, taught in the grades while not teaching the manual training. The expense the first year, including the equipment, teaching. etc., did not exceed $300. A class of twelve could be accommodated.



OBJECT STUDY

First Grade, State Normal, Cheney

This subject covers the home occupations, such as those of the carpenter, blacksmith, farmer, etc. In connection with the farmer's work the pupils studied the animals kept upon the farm and their use to man. This chart was made by the children to show the evolution of raw material to the manufactured article. The weaving was done by the children.


~MODEL MANUAL TRAINING~
~ROOM~
Scale ¼ in = 1ft
Seattle, Wash. 8-15-04.
B Tr Johnson
6 Strong
Oil Stone Fountain
Tool Rack
Electric Lights in Clusters of 3 in Ceiling
Tool Rack
20ft
30'
Paper Mats for Pupils Use
Teachers Closet
Lumber to Handon
Store Room 8'x12
Open Shelves to ceiling
Manual Training Room
27 x 36 ft
Black Board
Teachers Desk
Supply Closet

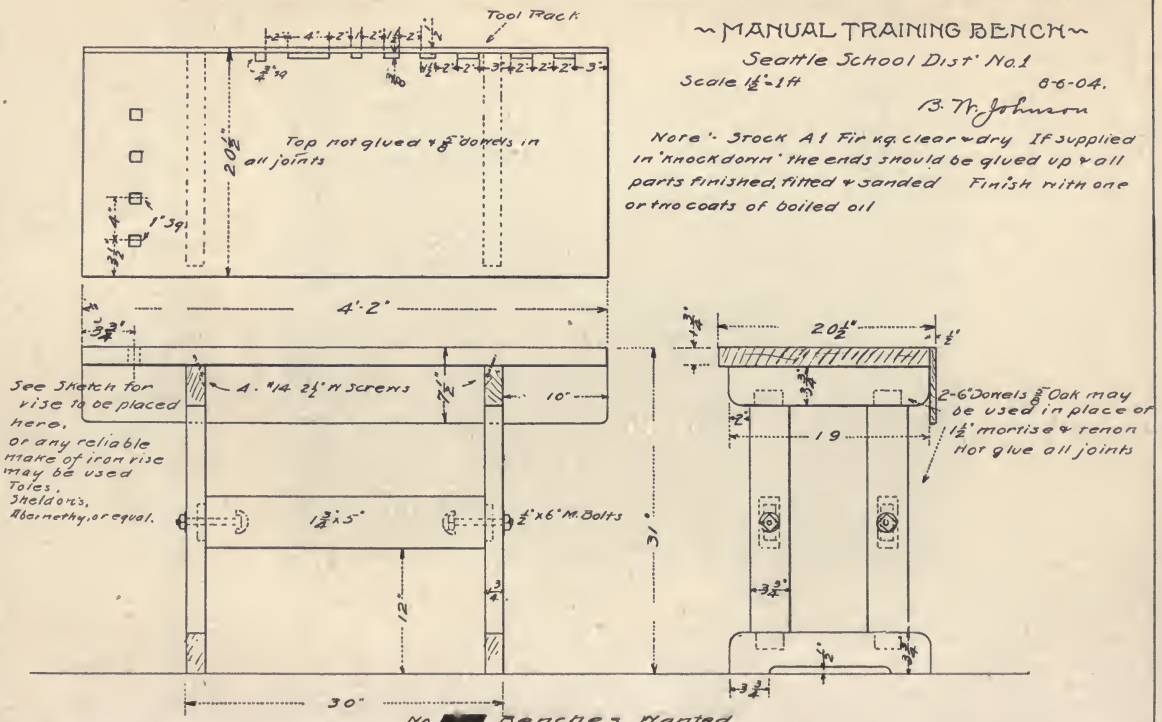
~MANUAL TRAINING BENCH~

Seattle School Dist' No.1

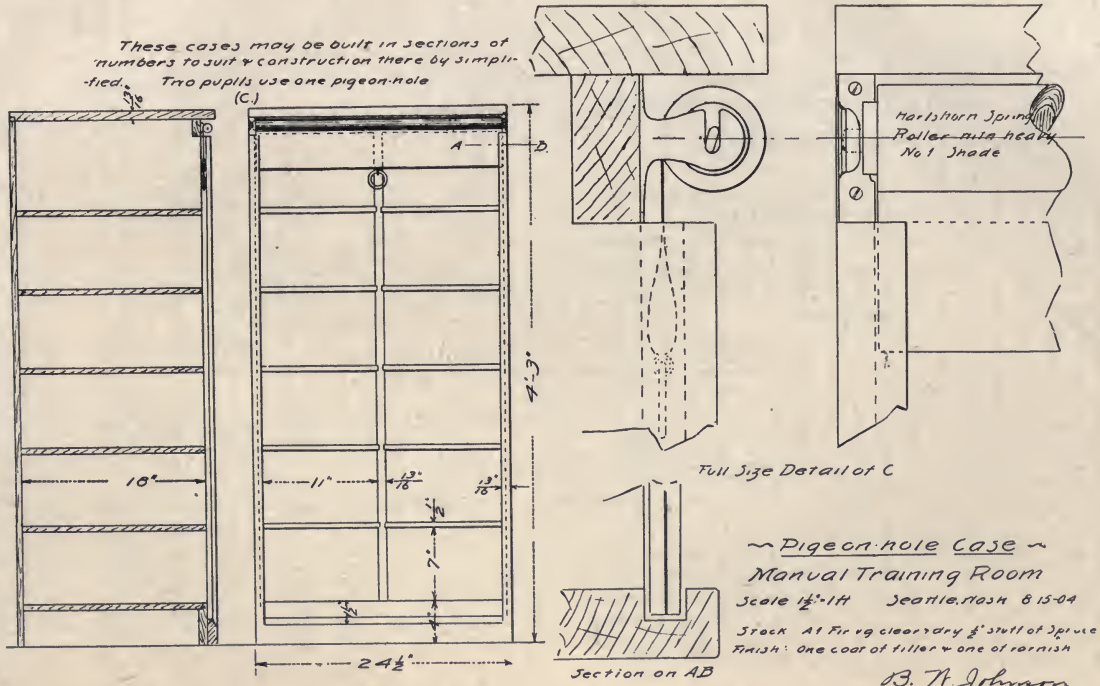
Scale 1½"-1ft 6-6-04.

B. M. Johnson

Note:- Stock A1 Fir kg. clear & dry If supplied in 'knock down' the ends should be glued up & all parts finished, fitted & sanded Finish with one or two coats of boiled oil


Tool Rack
Top not glued & ⅜" dowels in all joints
20½"
4'-2"
See Sketch for vise to be placed here, or any reliable make of iron vise may be used Toles, Sheldons, Abernethy, or equal.
4-"14 2½" M Screws
10"
1¾"x5"
½"x6" M. Bolts
12"
31"
30"
20½"
2-6" Dowels ⅜" Oak may be used in place of 1½" mortise & tenon Not glue all joints
19

No. [redacted] Benches Wanted



~ Pigeon-hole Case ~

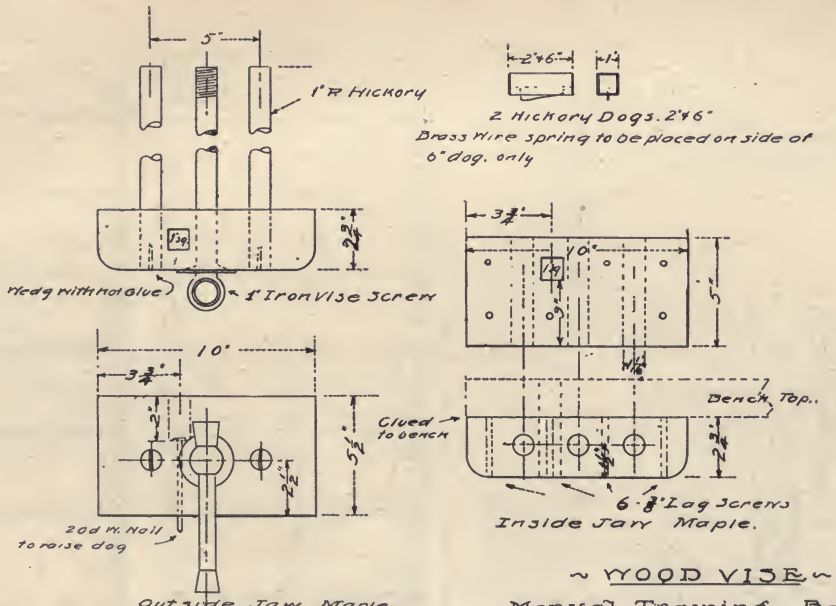
Manual Training Room

Scale 1½"-1ft Seattle, Wash 6-15-04

Stock A1 Fir rg clear dry ⅞" stuff of Spruce

Finish: One coat of filler & one of varnish

B. N. Johnson



~ WOOD VISE ~

Manual Training Bench

Seattle School Dist No. 1.

Scale 3in-1ft 8-13-03

B. W. Johnson

The consensus of opinion now places this phase of handwork in the above grades. The question of equipment up to these grades has not been a serious matter when considering the cost and maintenance. With the introduction of bench work this item of first cost and maintenance has proved a formidable stumbling block, for this work requires a separate room and special equipment, and what is almost of greater importance, a special teacher, one well trained in the manual arts, skillful in method and matter, who knows the relation of tools, their processes, to education and industrial life.

The equipment here given is complete in every particular and sufficient for any work possible in the grades named in any school system. The number of pupils to be accommodated in one center is dependent upon the number of lessons per week, and their length. Two periods of about 45 minutes a week is very desirable. If the pupils come some distance, one period of 85 or 90 minutes is better, as it does not require so much time in going to and from the center. Three classes per day should be the maximum, though a strong teacher could, under stress, handle four classes part of the time.

As to cost, the list of general tools is arranged according to their importance, so that, when necessary, curtailment may be made with least danger of impairing the efficiency of the equipment. Also if a less number of benches than 24 were used, considerable economy may be made in the number of duplicates ordered.

The benches shown are very simple, strong and durable, though made of fir. A cheaper bench could be built, continuous, in a rough hanner that would serve the purpose. The bench here given, cost complete, "in the knock down" with ends glued up, and with wooden vice, $6.00. An iron vice is much better (E. H. Sheldons, W. C. Toles, or equal), but they cost more. Any handy boy can put it together. A well made bench is self evident economy and built singly is an economy of floor space for the freedom and control of the class.

Further economies, dependent upon the service desired of the room, could be practiced by the skillful teacher n storage facilities; pigeon-holes for pupils, using simple shelves, teacher's desk, etc. Also where the number of pupils to receive instruction is not sufficient to occupy the full time of a teacher, the manual training teacher may teach part time in the class-room the regular work of the school. A teacher should be secured having skillful ability for double service with that end in view. Another plan tried successfully in two or more small adjacent districts, is to use one manual training teacher part time in each school.

SPECIFICATIONS FOR A MANUAL TRAINING ROOM.

Size: The area should be from 900 to 1,000 square feet for a class of twenty-four pupils, the accepted number for one class. (See accompanying drawing for details and arrangement.)

Light: The windows should be numerous and of full length if possible, placed in two adjacent sides or opposite sides of the room. The light should shine on the back and right-hand end of bench or

on both ends. Artificial light should be provided, preferably electric, in six groups or clusters near the ceiling, or one lamp properly guarded may be suspended over each bench.

Heat and Ventilation: These should receive the same care and consideration as in any other school room. The temperature of a work room may be several degrees cooler than the class-room and should be abundantly supplied with pure, fresh air.

Stock Room: This room may not be adjacent to the shop room, but is preferably so; as indicated, 100 square feet is sufficient. It may be long and narrow as it is wall space that is desired. Abundant shelving should be provided and lumber racks as indicated for standing the stock on end on the floor and between the pegs placed vertically to the wall.

The teacher's closet is for private use and for the storage of any finished work desirable to keep. It should be provided with hooks and shelves and doors with locks.

Wash Bowl: A wash bowl should be convenient, if possible, but it is not a necessity.

Tool Racks: These should be panels of board neatly made and placed on the walls convenient for the pupils' use. About 30 square feet is necessary. The tools may then be hung on hooks and cleats fastened to these panels. A table shelf under one of these racks about 15 inches by 6 feet is for the use of oils, shellac and glue and for the use of the oil stones.

Black Board: The black board should be about 4x10, placed as shown, where it may easily be seen by the pupils when at their benches.

Exhibit Board: About 4x12 may be suitably placed on the wall and neatly made and covered with a dark green burlap. The various models and other work may be hung here by means of small brass screw eyes and hooks. This is a valuable adjunct to the shop, as it may be a source of inspiration to the pupil.

Demonstration Platform: A demonstration platform is desirable on which the class may be gathered for class work. The bench placed in front of the platform is to be used by the teacher at such times, and by the pupil at all other times.

Furniture: The furniture comprises 24 work benches (see drawing), 24 stools 24 inches high, 1 teacher's desk of usual pattern with chair. The supply closet about 15 inches by 8 feet by 7 feet, may be built in with other shelving. The doors of same are to be provided with locks. The pigean-hole cases (see drawing) may be built separately or in numbers to suit wall space and the number of pupils to be accommodated. Three classes a day for five days is the maximum, or about 360 pupils per week, two pupils to use one pigeonhole. The curtain front serves as a protection against dust and should be of extra good strong quality.

Finish of Room: It should be finished as any other desirable class room. If a basement room is used select one having the largest windows with the best arrangement. A wooden floor is much the preferable for pupils and teacher and admits of easily fastening the benches to the floor. The passage to the room should be carefully screened from the sanitaries.

Room or Center:. (See sketch and specifications.)

24 benches with 24 stools, 24 inch.
1 desk for teacher.
Closets, 75 ft. of shelving, exhibition panel 4x12 inches.
Wall shelves, 6 inch. with tool racks for general tools.
Cases of pigeon-holes. (See sketch.)
1 4x10 black board.
A washstand should be convenient and storage space for lumber.

Tools for Each Bench:

1 No. 18 Stanley 2-ft., 2-fold rule, No. 2.
1 No. 50, 0, 2½ inch blade, Sloyd knife (Chadler & Barger cat.)
1 marking gauge, Stanley No. 65.
1 try-square, 6 inch, Stanley No. 20.
1 ¾-inch Buck's tanged firmer chisel, No. 2.
(Above handled and sharpened.)
1 10-inch Diston's back saw.
1 jack plane, Bailey No. 5.
1 block plane, Bailey No. 16.
1 maple bench hook.
1 bench brush, No. 20.
1 Springfield drawing kit, No. 2, 13x19. (Chandler & B. cat.)
I spring clip for holding drawings. "Bull Dog," large size.

Tools for General Use: (One set in each center.)

6 cross-cut saws, Disston's or Bishop's 10 pt. 8 D, 20-inch.
6 rip saws, Disston's or Bishop's 8 pt. 8 D, 22-inch.
12 No. 13 Maydole hammers.
6 braces, Spoffords, 7-inch sweep.
6 each, auger bits, R. Jennings, 4, 8.
3 each, auger bits, R. Jennings, 6, 10, 12.
1 set auger bits, R. Jennings, 13 bits, 4 to 16.
3 each, gimlet bits, 1-8, 5-32, 3-16, 7-32.
3 each, drill bits, 3-16, 7-32.
3 counter sinks, Rose (½-inch).
12 screw drivers, Champion R., blade 4-inch.
1 12-inch, 8 pas., Disston's compass saw.
1 doz. brad awls, handled, 1½-inch Colliers or equal.
1½ doz. extra blades, asorted, ¼-inch, 1-8-inch, for Webb saws.
2 India oil stones, 1x2x7, mounted, (1 medium, 1 fine).
4 India slip stones, assorted.
1 set carving tool slips, India medium, (4 pieces in set).

3 brass oilers No. 0, Chase's pattern.
2 knurled nail sets, fine and medium.
2 Wing dividers, B and C or B. S. and W., 7-inch.
6 10-inch hand screws (Bliss).
4 hickory mallets (R. head 2¾x5 inches).
4 each Buck's tanged firmer chisels, 1-8- inch, ½-inch, 1-inch.
1 set Buck's tanged firmer gouges, 12 tools, (1-8 to 2 inches).
(Above handled and sharpened.)
12 Carver's skew chisels, ½-inch, No. 2-S. J. Addis. Handled and sharpened.
12 Carver's veiners, 1-8-inch, No. 39-S. J. Addis.
6 cabinet scrapers, 3 with concave and convex ends.
3 flat bastard files, (handled, 10-inch Nicholson's).
2 half-round bastard files, (handled, 12-inch, Nicholson's).
3 half-round cabinet files, (handled, 12-inch, Nicholson's).
2 No. 18 Stanley T. bevels, 8-inch.
2 steel squares(nickle-plated, 12x8 inches.
2 draw knives, 8-inch razor blade, carpenter's.
6 iron clamps, Stearnes' Adj., 7-inch.
3 5-inch slim taper files, 1 handle, Nicholson's.
2 4-inch slim taper files, 1 handle, Nicholson's.
1 bit file, Nicholson's.
6 Bucks' tanged firmer gauges, ¾-inch.
(Above handled and sharpened.)
2 Bailey planes, No. 3.
1 Bailey plane, No. 7.
1 rip saw, Disston's, No. 12-5 pt. 28-inch.
1 C. C. saw, Disston's, No. 12-10 pt. 24-inch.
1 No. 3 11-inch Wentworth's saw vice.
1 No. 95 Morrill saw set.
1 grindstone with foot power, 24x2½ inches, Schofield or equal.
3 1½-inch shellac brushes, flat.
3 1½-inch rubber bound varnish brushes, flat.
18 coping saws with saws, 6 doz. extra blades.
1 pair cutting pliers, Bernard's, 5½-inch.
1 pair 4-foot clamps, E. H. Sheldon & Co., Chicago.
I Plumb's half hatchet, No. 2.
1 Clark's expansive bit, No. 2.
1 Langdon mitre box, No. 18.
1 pyrography outfit.
6 varnish cups with covers, (tin, pint size).
12 Eeagle school compasses, No. 576.
1 belt punch, 3-16-inch.
1 doz. plane bits, each No. 5 and No. 16 extra.
½ doz. lever caps for each, No. 5 and No. 16 extra.
1 small iron vise, 2½-inch jaw with horn (Cheney No. 10).
1-3 doz. whisk brooms.

1 Stanley plane No. 78.
1 Stanley plane No. 48.
1 skein of chalk line.
1 pair tinner's snips, 10-inch.

Supplies for Eeach Center. (Estimate for 360 pupils for half year).

Hardware:

5 quires each sand paper, 00-1, 1½.
20 lbs. cotton waste.
1 ball twine, 1-16-inch.
2 large bottles Three-in-One oil.
5 lbs. each wire brads, ½-inch No. 20; 3-8-inch No. 19; ¾-inch No. 19; 1¼-inch No. 17; 1½-inch No. 16; 2-inch No. 15.
3 lbs. each wire finish nails, 6 d and 8 d and 4 d, 6d and 8 d common.
1 gross each flat bright screws, ½-inch No. 5; ¾-inch No. 6; 1-inch Nos. 5, 8 and 9; 1½-inch No. 10.
1 gross 5-8-inch cap hooks, brass.
1 gross screw eyes, brass, No. 1214.
1 gross screw eyes, iron, 208.
1 gross sq. screw hook, No. 110.
1 gross sq. screw hook, No. 114.
12 boxes cut steel thumb tacks (100 per box).
1 quart Le Page's glue.
1 lb. No. 6 erasers.
6 boxes cut tacks, 4, 6, 8.
24 Springfield drawing pads (white) for No. 2 kit. (Chadler and Barber.)

Paints and Oils:

1 1-lb. can lamp black in oil.
1 1-lb. can burnt sienna in oil.
1 1-lb. can burnt umber in oil.
1 1-lb. can burnt rose lake.
1 1-lb. can red.
1 1-lb. can blue.
1 1-lb. can white.
3 lbs. putty.
1 gal. boiled oil.
1 gal. turpentine.
1 gal. coal oil in spout can.
1 2-gal. can Columbian spirits.
5 lbs. shellac, orange.
1 ½-gal. can white shellac.
1 1-lb. can floor wax.
1 lb. pumice stone powder.

Emergency:

1 4-oz. botle carbolic vaseline.
8 rolls 1½-inch bandages.
1 4-oz. bottle carbolic acid.
1 bottle (small) liquid skin.

Supplementary Books:

1 Wood-Working for Beginners—C. G. Wheeler. G. P. Putnam Sons.
1 Tools and Machines—Charles Barnard. Silver Burdett & Co.
Vols. I, II, III, "Amateur Work," (Monthly), Boston, Mass.
2 catalogues of Chas. A. Strelinger (hardware), Detroit, Mich.
1 catalogue of Montgomery & Co. (hardware), New York.
1 catalogue of Hammasher, Schlemmer & Co. (hardware, New York.
1 "Handbook for Lumbermen," Henry Disston & Sons, (saws), Philadelphia.
1 catalogue E. H. Sheldon & Co., (tools and benches), Chicago.
1 catalogue Toles Co., W. C., (tools and benches), Chicago.
1 "The Arts and Crafts for Beginners," by Frank G. Sanford.
1 "Wood-Carving," by George Jack. D. Appleton & Co.
1 "Elementary Woodworking," Edwin G. Foster. Ginn & Co.
"The Manual Training Magazine," (quarterly), Peoria, Ill.
"The School Arts Book," (monthly). The Davis Press, Worcester, Mass.
1 "Mechanical Drawing," Anson K. Cross. Ginn & Co.

ESTIMATED COST.

12 pigeon-hole cases	$ 60.00 to $ 75.00
24 benches with stools	150.00 to 150.00
Shelving, closets, black boards, teacher's desk, etc.	50.00 to 75.00
25 sets tools for each bench, at $6.00	144.00 to 144.00
General tools	90.00 to 125.00
	$494.00 to $569.00
Hardware supplies, about	$ 14.00
Paint supplies	11.00
Emergency supplies, about	1.00
Lumber, about	150.00
Total for 360 pupils, one year	$ 176.00
Salary of teacher	800.00
Ten per cent. depreciation on equipment	50.00
Total for one year	$1,026.00

The above is estimated from Seattle, for the past year.

B. W. JOHNSON,
Director of Manual Training, Seattle, Wash.

MORALS AND MANNERS.

The teaching of morals and manners differs in several respects from that of other subjects. In the first place, these subjects, or, we may say, this subject has not been accorded a place among the subjects of the curriculum. To the pupil thinking of the school work, either this subject does not occur at all or is thought of as secondary and out of place. Even to mature people and parents, this work occurs as something provided for in the Sunday school or the church or the home or in all of these and as more or less of an intrusion on the serious work of the public school.

This feeling is rather natural but serious reflection will lead practically all teachers and parents to agree on giving moral instruction in the pupblic school. The purpose of the public school is to make the strong man, good citizen and useful member of society. To this end, no training, either in school or out, plays a more important part than the training in good conduct and the inculcating of wholesome principles of life. The public school training lasts through a period in the pupil's life when his conduct and character are being fashioned and the public school cannot escape the responsibility of a part in this work and the teacher must not lose this opportunity.

Another respect in which this teaching differs from the work of the regular curriculum is that it is dependent for its efficiency in so large a degree on training and on teaching of which the pupil is hardly conscious.

In a sense, moral teaching may have a secondary place on the programme, in so much as it has a share in so nearly all of the work and even the play of the school. It may well be less conspicuous than the regular class work but, in the plans and purposes of every teacher, it should have a place determined by its importance, which is primary.

RELIGIOUS TEACHING.

Moral training, in the minds of many people, is inseparably associated with religious teaching. This fact will cause a certain degree of prejudice against the thought of moral training in the school until the nature of the work comes to be understood. In the present religious organization of society, there is a deep-rooted fear that harm might come, directly or indirectly, from religious teaching. This fear is represented, possibly too severely, in our state by a law not permitting any formal religious teaching or regular reading from the Bible. The law should be observed strictly as a law, which act itself is teaching morality, but further than this the discretion and good judgment of the teacher should avoid arousing in any way the fear or prejudice which this law represents.

THE TEACHER.

If we are not to depend on religious teaching for effective moral teaching, how is the moral influence to be wielded? It should be understood, from the beginning, that the teacher is the determining factor in the training of morals and manners in school. The teacher is the big factor in determining progress in all school work, but this place is unusually large in moral training. A boy may learn arithmetic after a fashion from a teacher whom he does not like or respect, but taking in the spirit of moral principles is a subtler thing and lack of respect for the teacher may mar and distort the effect.

That the teacher, to be effective in this work, must be a man or woman of character is rather easily recognized. A few persons might suppose, for a time, that a teacher might teach one thing in character and be another, might teach one set of principles in morals and manners and practice another, but thoughtful teachers would see that this work would be just as poor as the work in arithmetic by a teacher who did not know the subject.

There is another essential, in importance second to the character only, of the teacher. The importance of this essential has often been overlooked and not understood. This essential is that the teacher must get a hold on his pupils as a teacher, before he can wield a determining influence on their conduct and character. To get this hold, the preparation of the teacher must command respect, his devotion to his work must show his earnestness, his skill as a teacher must win his pupils' esteem, his generous sympathy and kindly interest must win the good will of all the pupils. In other words, he must be successful in the best and fullest sense as a teacher to gain this hold on his pupils essential to the effective moral influence.

Further than this, to wield the best influence in the school-room, the teacher must command the respect and esteem of the parents of the community and gain a generous place in their good will. The school, if a peninsula, is not an island. The school is just one of the important factors employed in our civilization to make men and women of our children. Co-operation is the word. To gain this, the teacher must command the confidence and good will among the men and women of the community, as a man or a woman, a member of the community.

INDIRECT MORAL TEACHING.

When once the teacher has gained this hold on his pupils and on the community, an essential part, if not the most important part, of the moral training of the school will be through indirect moral teaching, the wholesome influences which the teacher can bring to bear on the pupils' lives. While this teaching is indirect, the teacher must realize its force and see that it is fully utilized. In the first place, we can hardly over-estimate the example of the noble man or woman in the school-room, when a strong hold has been gained with the

pupils. Who has not heard children playing school having difficulty in deciding which one should be allowed to be Miss A or Mr. B in the play school? This play suggests how much of Miss A or Mr. B will be woven into their real mental and moral fabric.

Environment is another important factor in fashioning the tastes and ideals of the pupils. A teacher cannot control environment altogether but he is likely to be able to put the modifying touches on the immediate surroundings that will remove depressing or detrimental influence. It is fortunate if the school house can be a good one and in a good location, if the grounds are good and large and well cared for, if the school furniture is good and attractive. Some of these things the teacher cannot control but he may be able to wield an influence in modifying. For instance, work on improving the appearance of the grounds by the pupils themselves gives an impressive, helpful lesson in good taste. In the school-room, however, the teacher has control, in the main, and everything must be in good taste.

The strongest moral influence is for the teacher to succeed in having a good school. By this we mean a good school as measured by the ordinary standards; a school in which the teacher is easily master of the situation, in which the class work is good, in which the government and discipline are good, where the students are busy with their studies, where play is active and full of life; a school, in short, which would be generally pronounced successful. The business-like atmosphere and spirit of such a school puts moral stamina and a good wholesome spirit into the pupils. The pupils learn law and order unconsciously and learn to work in harmony with the other parts of the school community.

The teacher should have in mind the moral bearing of all these different phases of school life. The recitation or class room should be pervaded with a wholesome atmosphere. The work of the teacher with the class must be masterful, his attitude generous and sympathetic. His attitude should make the pupils independent, free from fear and unnecessary restraint. His perfect honesty and frankness with them should bring out the honest and independence on their part, and his fairness and impartiality should maintain a feeling of co-operation and good will.

The class work should be interesting and appeal to the pupil in such a way that he will study in the preparation of his lessons. A pupil interested in his work is free from a large part of the evils so difficult to keep out of school life.

The government of the school must have for its immediate aim the securing of conditions favorable to the working out of the purpose of the school. The ultimate aim of government and discipline should be voluntary good conduct on the part of the pupils and independent responsibility.

The teacher should also concern himself with the play of the pupil. With the younger pupils, the play is a very large part of their

school life. With all of the pupils, it is an important part of the school life. Play will reveal to the keen teacher the characteristics and individualities of the pupils which he may not understand in any other way. Taking an interest in games or play or even taking part in their play often furnishes an opportunity for determining the spirit of the pupils and directing their attitude toward one another which is not furnished in any other way.

The associations of the pupils are among the important influences on their characters in the school. The teacher may do much toward determining the best associations for the individual pupils.

All of these things then, that go to make up a successful school measured simply as a school, develop unconsciously to the pupil those manly traits which form the basis of character. If the teacher feels that he has not had enough time to give direct moral instruction, he will find, at the end of the year, that helpful moral influence has been exerted in doing the regular school work when done after the highest standards.

DIRECT INSTRUCTION.

Besides the moral influence through the regular work of the school, the teacher may help the students in their tastes and ideals by methods of which he is more conscious. The most direct way is through talks on topics of tastes and morals. Sometimes these talks may be a little more formal, with a place in the programme reserved for them. Sometimes they may be informal and suggested by some particular action or circumstance. The object of these talks should be to give the students a conscious understanding of the moral principles involved in the conduct which they have been led to take on more or less unconsciously.

Each school and perhaps each teacher should determine the best time and method of giving direct talks on themes of this kind.

A little less direct instruction may be given and yet given with a conscious plan and, with the youngest students, various drills and movements may be used which will give them self-control, community of action and some of the simpler habits which they need.

Pictures may be used that will convey and impress their respective lessons of patriotism, self-sacrifice, heroism and the various virtues. Some choice specimens, both in the way of pictures and works of art, may be used in the room itself both to convey a lesson in its meaning and also to serve as ornaments to cultivate good taste.

To the same end, songs may be used in school. Part of the good effects of singing in school is easily defined and there are even other effects that are helpful and elevating in ways more difficult to define.

Attractive stories may be used with discrimination, which will carry home to the pupil a teaching that might not reach him in a more direct and abstract way. The teacher must fit the selection to the pupils, making this distinction that he may use to good advantage fairy tales, fables, mythology, maxims, proverbs and miscellaneous stories, all eligible through their message.

In much the same way, though with the moral teaching taking a more secondary place, the material of the lesson can frequently be utilized. The work in history will be rather helped than hindered by impressing the lessons of heroism, of patriotism, of devotion to principle recorded in the text. Literature has for its material the hopes and sentiments and ideals, from almost every page of which helpful lessons may be gleaned by the pupil under the direction of the teacher. Science furnishes knowledge but also lessons of accuracy and truth, and so it is with practically all of the subjects in the course. The themes that may be brought up in formal talks, supplemented by those that are suggested in the regular work, cover a wide range of the principles of conduct and character which would be of most benefit to the pupil in school.

Various celebrations, too, would supplement the regular work of the school. Thanksgiving day would suggest its lessons and, enforced by the actions of the officials of the State and Nation, Arbor day would have its suggestions of beauty and good taste and foresight and public spirit. Memorial day would give its teaching of patriotism and the cost of a nation.

In direct teaching, the teacher should take certain caution against things which might mar or annul the effect of the teaching. The teacher should not "preach." The views expressed by the teacher should be so generous and discreet as not to arouse prejudice. The prejudice aroused by what was felt in the community, as biased religious teaching, might more than offset the good done by the teaching. The teacher must not, either, have a stock of moral food which he feels bound to work off on his pupils regradless of their needs and regradless of what part of his teaching they are making their own.

THE CHILD.

In applying these various methods of moral teaching and training the first consideration is the child itself. As in the other work of the school, it is difficult to meet the peculiar needs of the individual pupil. That must be done as far as practicable and that will be the test, more or less, of the success of the work, but there are many things common to the average child, both on entering school and to children in the respective grades of the school. The teacher then should study the moral equipment of the child at these several stages. It is noticeable that the child first entering school is largely actuated by impulse and that its conscious sympathy goes little beyond itself. Its knowledge of the whys and wherefores of conduct is very slight. The work of the first grade then must be fitted to the child with this meagre equipment and with the capacity revealed to the observing teacher. A good environment will have its effect at this stage. Various concert drills and movements will furnish their training. Singing in concert will leave its impress and the simple beginnings of habits and conduct can be made.

With the same study of the pupil and its development in the different stages, the work can be adapted to the needs of the different grades.. The work of each grade, as in the regular lessons, should be built on the work preceding.

Not only should observations be made as to what the equipment of the child is on entering the school and at its different stages but careful consideration should be given as to the equipment that the child should have on leaving school. The child should be regarded in all school work both as a child and as a prospective man or woman. We wish the child to take on the virtues of life and avoid the evils, form good habits and avoid bad habits and, finally, we want the things that go to make up character. The character of today is the positive character of force as opposed to the passively good. Good moral character, too, should be marked by a willingness to conform to the ideas of law and order with reference to society and to the State. Character likewise should be secured by a knowledge of moral principles and discriminating moral judgments and, further than this, the man of moral character should acquire an independence and individuality capable of continuous growth.

Perhaps caution should be suggested in following out our plans of teaching morals and particularly of teaching manners to our pupils. The teacher should avoid making the pupils self-conscious and artificial in their bearing and conduct. With the younger pupils particularly, the conduct can be moulded in right lines while the child preserves its naturalness.

MOTIVES.

The motives to be appealed to in the child in the different grades of its development will have to be considered carefully. When the child first enters school, its actions will be governed by the teacher's authority, just as it has obeyed its parents. It does a given thing because it is asked or told by the teacher. For a time it accepts a thing as right because the teacher says the thing is right. This is a security for the child, but its own faculties ought to be brought into play as they develop. An appeal, at the first in simple matters, may be made to the child's taste. It can distinguish between what is pretty and what is ugly, between the attractiveness of what is clean and of that which is dirty and, with some directing, between simple actions that are becoming and those not becoming.

Personal interest may be appealed to. The child can be made to see that it will profit by good conduct, by study, by obedience, by regular attendance, by truthfulness, by politeness. This is not the highest motive but it is an important one at all times and it will have weight with pupils at a time when they do not take in the highest motive, to do right because it is right.

The highest motive and the last to develop is that one of doing right because it is right.

In dividing the work for the different grades, it is not so import-

ant what topic of conduct we are presenting to the pupil as it is to understand by what motives he is capable of being actuated.

These various motives can be appealed to, first, in regard to things which come in the child's experience. Abstract principles of conduct or morals will not mean much to the child at first. The virtues and vices considered should be largely those of the child's school life. It will not mean much to the child of seven to present to it that men should pay their honest debts but it can be brought to see rather plainly that the pencil borrowed from the girl across the aisle should be returned. Hence, in arranging topics for the different grades, rather arbitrary and artificial at best, the topics for the earlier grades should be confined to the child's experiences in school or at the time of attending school. The topics of the later grades should be suggested by these experiences or involve similar principles to be illustrated or explained by the experiences and observations in school life.

COURSE OF TRAINING.

No attempt is made here to have a complete list of topics in morals and manners. Many things omitted are important but their omission here is not so important. The important thing after all is to help lead the pupil to desire to do what is right and becoming, to become capable of sound moral judgments and good taste and he is then ready to face new questions and situations as they arise.

RELIGIOUS TEACHING.

If the teacher should feel that he could do still more good if he felt free to read the Bible and conduct religious exercises in the school, the corresponding opportunity may be taken advantage of, if he will properly identify himself in the interests of the community. If the teacher has the hold on the pupils that we have spoken of, the mere fact that he attends church regularly will show his pupils his attitude toward the religious life. In addition to this, the opportunity will seldom be wanting for him to take part in the Sunday school work, through which he can influence directly the religious life of the pupils. He may feel that he is not hired to do all these things. He is right in that such things can never be specified in the contract but, if he look upon the leter of the contract as a secondary things and the opportunity for character building as the primary things, then his whole serious thought will be of touching the lives of his pupils in whatever way and at whatever time he may be helpful.

OUTLINE.

FIRST GRADE.

1. Environment, teacher's example (all grades).
2. Drills in marching, concert exercises, concert singing and action songs, with object of teaching the ways of school, conformity, self-control and obedience.

3. Pupils occupied at their seats with pencils, cards, sticks, straws and blocks—one step removed from kindergarten.

4. Conversational talks for mutual acquaintance on obedience, order, quiet and relations to other children.

5. Note: Method, directing rather than instruction or discussion.

SECOND GRADE.

1. Plan of procedure much the same as with first grade, with variations in methods and appeals to additional motives. Work to be based on results of first year.

2. Conversational talks, to understand individual pupils and win their confidence, on politeness to their teacher, to one another, on neighborliness and generosity toward one another, unselfishness, kindness, gratitude and other qualities suggested by the school relations.

3. These talks, kept definite and concrete, are to be supplemented and reinforced by directing the pupils in doing things that illustrate the principles taught, to loan one another a pencil or plaything, to wait for one another to use an eraser first, to give the one called upon a full chance to answer a question and in the proper conduct in school.

4. The talks might be supplemented further by simple stories.

THIRD GRADE.

1. Simple school virtues reinforced, as conformity to the ways of the school, obedience, politeness in school, attendance, punctuality, quiet, attention, business at the seats.

2. Direction to be given on behavior on the way to school, politeness to strangers, to older persons, to guests at the school.

3. Children to be taught fairness on the playground, honesty, truthfulness, frankness.

4. Simple moral stories and fairy tales may be used to illustrate and impress moral principles.

FOURTH GRADE.

1. Definite instruction about cleanliness and neatness, with reference to one's personal appearance, clothing, desk, school room.

2. Instruction in regard to care of property of the school, public property and other people's property. For example, pupils should not mark or cut with a knife on a desk, building or fence.

3. Pupils should be taught to be considerate toward one another. No pupil should be rude toward any other pupil in school or consciously hurt the feelings of any pupil, whether poorly clothed, deformed or dull.

4. Pupils might be put on their guard against tatling, bad language and the vices incident to school life; the boys, for example, against cigarette smoking.

FIFTH GRADE.

1. Practice of school virtues already learned, enforced by a more prominent appeal to reason and judgment.
2. Pupils should be directed toward voluntary good conduct, self-accountability and personal responsibility.
3. Explanations of the relations of good morals and good health.
4. Fables and stories illustrating individual virtues and vices.

SIXTH GRADE.

1. Courteous attitude toward teacher and helpful attitude toward younger pupils.
2. Talks on study, industry, purpose, self-reliance.
3. Warning against envy, jealousy, talking about one another.
4. Good stories from biography and mythology.

SEVENTH GRADE.

1. Practice of school virtues, with more prominent appeal to proper pride, self-respect and moral motives.
2. Explanation of difference between grades (marks) and attainment, between reputation and character.
3. Ideas of justice, duties toward schoolmates, toward neighbors, toward fellow-men.
4. Direct pupils in some elevating and interesting reading to be done by themselves.

EIGHTH GRADE.

1. Qualities to be sought—independence of conduct, self-reliance, self-control, preparatory to entering High School, with bearing which younger pupils may follow.
2. More formal explanation of the social usages and good forms that would concern a boy or girl of thirteen or fourteen.
3. Increased confidence extended by teacher.
4. Higher grade of reading.

BIBLIOGRAPHY.

How to Teach Manners in the School-room, by Julia M. Dewey, Kellogg & Co., N. Y., 50c. Helpful in suggesting methods of handling this subject for the youngest pupils.

School management, White, American Book Co., $1.00. Good lists of the virtues, outlines of moral lessons and lists of reading.

Moral Instruction of Children, Alder, D. Appleton & Co., $1.50. Good discussion of duties and classification of reading matter to be used in school.

Moral Education, Edward Howard Griggs, B. W. Huebsch, N. Y., $2.00. Sane, sensible and practical teaching, with rather full bibliography.

GLEANINGS FROM THE REPORT OF THE COMMITTEEE OF FIFTEEN.

Reading:

"After the second year, one lesson each day for the entire eight years." (p. 89.)

"After the third year, reading lessons should be given of selections from classic authors, with reference to (a) elocution, (b) grammatical peculiarities, (c) literary contents." (p. 89.)

"In composition work, reading lessons will give matter for literary style, geography for scientific style, and arithmetic for a business style." (p. 92.)

Language:

"The oral grammar lessons from the first year to the middle of the fifth should deal chiefly with the use of language, gradually introducing the grammatical technique." (p. 91.)

"The punctuation, spelling, syntax, penmanship, choice of words, and style should not, it is true, be made a matter of criticism in connection with the other lessons, but only in the language lesson proper. But the pupil will learn language all the same, by the written and oral recitation." (p. 91.)

"A frequent error is the practice of making every recitation a language lesson, and interrupting the arithmetic, geography, history, literature, by calling the pupil's attention abruptly to something in the form of his expression." (p. 96-7.)

"The faulty English should be criticized as showing confusion of thought or memory, and should be corrected in this sense. But solecisms of speech should be silently noted by the teacher for discussion in the regular language lesson." (p. 102.)

"Technical grammar can never educate the child in the use of higher and better English." (p. 48.)

Literature:

"The chief esthetic training of the elementary school is the study of fine selections of prose and verse. These may be intensified by the use of pictures." (p. 48.)

"Literature is artistic according to the fullness with which it expresses some phase of soul-experience." (p. 47.)

Miscellaneous:

"Grammar demonstrates its title to the first place in the seven liberal arts by its use as a discipline in analysis, in logic, and in classification." (p. 48.)

"Side by side with language study is the study of mathematics in the schools, claiming the second place of importance of all studies." (p. 52.)

"The higher moral qualities of truth-telling and sincerity are taught in *every* class that lays stress on accuracy of statement." (p. 12.)

"Natural science claims a place in the elementary school, not so much as a disciplinary study, as a training in habits of observation and in the use of the technique by which such sciences are expounded. (p. 69.)

"Thus the pedagogical order is not always the logical, or scientific order. A first course should be given in botany, zoology, and physics, so as to treat of the structure of familiar plants and animals, and the explanation of the physical phenomena as seen in the child's playthings, domestic machines, etc." (p. 69.)

"The overcultivation of the verbal memory tends to arrest the growth of critical attention and reflection." (p. 49.)

Staple Branches in Their Order:—"Grammar, literature, arithmetic, geography, and history are the five branches upon which the disciplinary work of the elementary school is concentrated." (p. 67.)

"Most practical knowledge is knowledge of human nature." (p. 47.)

GRAMMAR SCHOOL EXAMINATIONS.

Under legislative act of 1903 the office of Superintendent of Public Instruction is given power to prescribe uniform rules and regulations for grammar school examinations. In accordance with the authority thus granted, the following regulations have been announced:

1. Three examinations each year will be held, as follows:
   (a) The last week in August.
   (b) The third Thursday in January.
   (c) The third Thursday in May.

2. Pupils are expected to show County Superintendents that they have completed the subject in which they take the examination. For this and other purposes County Superintendents will require from the teachers of the county a statement of the pupils' work in all subjects covered by the eighth grade examinations. Superintendents may require, in addition to this statement from teachers, such other information or recommendations as they desire in regard to the pupils.

3. Pupils will be permited to retain all grades of 80 per cent. or above that they make at three consecutive examinations; *but no pupil shall be recommended by the County Superintendent for the eighth grade diploma who does not show to the examining board that the work in all subjects has been regularly and satisfactorily completed in the grades.*

4. (a) The pupil must show conclusively that at least one of the pupils' reading circle books has been read.

(In addition to the written review required by the questions, Superintendents may make such local rules as they desire to insure that the provisions of this rule are met.)

(b) For August examination the reading of one of the books adopted for the preceding year, will be sufficient. For the January and May examinations, selections must be from the list adopted for that school year.

(c) For the school year 1905-1906 the following list was adopted in June, 1905, by the State Board of Education:

David Copperfield (any edition).

"The Western United States" (Fairbanks), D. C. Heath & Co.

"Story of Japan" (Van Bergen), American Book Co.

"Agriculture for Beginners" (re-adopted), Ginn & Co.

5. All examinations will be for a period of two days (Thursday and Friday). County Superintendents should make programme conform as nearly as possible to that for teachers' examinations. Places and conductors will be definitely arranged for, and conductors should not be teachers of the eighth grade if it can be avoided.

[NOTE.—It is believed by this office that if the above rules are enforced by the County Superintendents, practically all the well-founded objections to past regulations will have been met. It is not intended to make the examinations easier, but it is intended to make them more fair. Under the above rules subjects completed in the seventh grade may be taken at the following August examination. Rules 2 and 3, if carried into intelligent effect, should result in giving the actual school work and recommendation of teachers their proper place in the system. It is confidently expected that if the above provisions are faithfully followed, with proper grading by examining boards, the results will be much stronger grammar school work, and consequently a greater educational value for the eighth grade diploma.]

The law provides that the County Superintendent of Schools, or assistants duly appointed by him, shall conduct the examinations; that the manuscripts shall be graded by a county board of examiners, consisting of four persons holding valid certificates; that the names of successful applicants and their grades shall be reported to the Superintendent of Public Instruction within ten days after any meeting of the board of examiners.

No argument is needed to convince teachers and school authorities that the system of grammar school examinations and graduation is of direct benefit to the individual pupil, as it is also to the school and the state system. It therefore should be unnecessary to urge upon teachers the importance of encouraging pupils to complete the grades and take the eighth grade diploma. The fact that this diploma insures entrance to any High School of the State is an inducement to be mentioned; but the greater good to the pupil of having completed a definite work and the consequent influence upon his character should be emphasized. The department of Public Instruction expects the co-operation of all County Superintendents, of all graded school principals, and of all teachers, to the end that the system of grammar school examinations may be made thoroughly satisfactory and effective.

COURSE OF STUDY.

Extracts from the Code of Public Instruction:

"SEC. 27. The State Board of Education shall have power, and it shall be its duty:

"First. To prepare and outline course or courses of study for the primary, grammar and high school departments of the common schools.

"SEC. 309. It shall be the duty of the principal of each school in all districts of the first class to prepare and issue, under the direction of the city board of education, or board of school directiors of the district, a course of study for his schools, which course of study must, before going into effect, be approved by the State Superintendent of Public Instruction. Such course of study shall conform to the manual, or general outline, prescribed by the State Superintendent of Public Instruction,and all examinations and promotions under the same shall be based upon the minimum credits in each study, as prescribed by the State Superintendent of Public Instruction in his general manual or outline course of study."

In accordance with the above provisions of the Code, Courses of Study for the common schools and high schools of the State were adopted on April 13, 1905. See following pages.

OUTLINE COURSE OF STUDY FOR THE COMMON SCHOOLS OF THE STATE OF WASHINGTON.

Prepared by Superintendent of Public Instruction and Approved by State Board of Education April 13, 1905.

GENERAL EXERCISES { Morals and Manners; Kindness to Animals (at least 10 minutes each week). Agriculture or Nature Study (book in hands of teacher). Manual Training. Household Arts. } Optional with Boards of Adoption.

Boards of adoption may in their discretion adopt text-books in music, drawing, nature study or elementary agriculture.

GRADES	I.	II.	III.	IV.	V.	VI.	VII.	VIII.
READING	PRIMER and FIRST READER	SECOND READER	THIRD READER	FOURTH READER	FIFTH READER	SIXTH READER	SEVENTH READER or CLASSICS	EIGHTH READER or CLASSICS
WRITING	BOOK I.	BOOK II.	BOOK III.	BOOK IV.	BOOK V.	BOOK VI.		
ARITHMETIC	Oral	Oral	Oral or ELEM'NT'RY ARITHMETIC	ELEM'NT'RY ARITHMETIC	ELEM'NT'RY ARITHMETIC	ADVANCED ARITHMETIC	ADVANCED ARITHMETIC	ADVANCED ARITHMETIC (a)
SPELLING	Oral in connection with Reading	Spelling with or without text-book	SPELLER with use and meaning of words	SPELLER with use and meaning of words	SPELLER with simple word study	SPELLER with simple word analy's	SPELLER or list of sel'c'd words	SPELLER or list of sel'c'd words
LANGUAGE	Oral in connection with other subjects	Oral and Written in con'c't'n with other subj'ts	Oral and Written in con'c't'n with other subj'ts	LANGUAGE and Composition	LANGUAGE and Composition	LANGUAGE and Composition	GRAMMAR	GRAMMAR
GEOGRAPHY			Oral	ELEM'NT'RY GEOGRAPAY	ELEM'NT'RY GEOGRAPHY	ADVANCED GEOGRAPHY	ADVANCED GEOGRAPHY	
HISTORY				Oral	(b) ELEM'NT'RY HISTORY or HISTORICAL READER	(b) ELEM'NT'RY HISTORY or HISTORICAL READER	(c) HISTORY and Civics combined	(c) HISTORY and Civics combined
PHYSIOLOGY	Oral	Oral	Oral	Oral	Oral	HYGIENE	Oral	(d) PHYSIOLOGY

(a) With special reference to business forms.
(b) It is intended to allow boards of adoption wide discretion in the selection of these books.
(c) Civics will be taught in connection with history without any additional text-book.
(d) Districts completing the physiology may review other branches for remainder of year.

OUTLINE COURSE OF STUDY FOR HIGH SCHOOLS.

Prepared by the Superintendent of Public Instruction and Approved by the State Board of Education April 13, 1905.

	REQUIRED IN ALL COURSES		SCIENTIFIC COURSE	CLASSICAL COURSE	COMMERCIAL COURSE
FIRST YEAR	BOTH SEMESTERS Algebra English	*First Semester*	Physical Geography Option	Latin Option	Commercial Arithmetic or Bookkeeping Option
		Second Semester	Physical Geography Option	Latin Option	Commercial Geography or Bookkeeping Option
SECOND YEAR	Plane Geometry Rhetoric and English Classics	*First Semester*	Botany or Physiology Option	Latin Option	Bookkeeping or Commercial Arithmetic Option
		Second Semester	Botany or Zoology Option	Latin Option	Bookkeeping or Commercial Geography Option
THIRD YEAR	English Physics	*First Semester*	Modern Language Option	Latin Option	Stenography and Typewriting Option
		Second Semester	Modern Language Option	Latin Option	Stenography and Typewriting Option
FOURTH YEAR	U. S. History and Civics	*First Semester*	Modern Language Chemistry Option	Latin English Option	Commercial Law English Option
		Second Semester	Modern Language Chemistry Option	Latin English Option	Economics Advanced Stenography and Typewriting Option

NOTE.—Options for any year may be filled by selection of any subjects prescribed in any course provided for that year, or from the following subjects for the year designated.

FIRST YEAR: Ancient History, or European History. Drawing. Modern Language. Manual Training, or Household Arts.

SECOND YEAR: European History, or Ancient History. Drawing. Modern Language. Manual Training, or Household Arts.

THIRD YEAR: English History. Drawing. Higher Algebra. Solid Geometry. Manual Training, or Household Arts. Geology. High School Arithmetic. U. S. History and Civics (only for districts maintaining a three-year High School).

FOURTH YEAR: Drawing. Solid Geometry. Trigonometry. Manual Training, or Household Arts. Geology. Astronomy. Psychology. High School Arithmetic.

ACKNOWLEDGEMENT.

The Superintendent of Public Instruction wishes to acknowledge the courtesy of Hon. W. L. Stockwell, Superintendent of Public Instruction of North Dakota, in permitting this department to make an extensive extract from his course of study.

ILLINOIS COURSE OF STUDY.

The Illinois Course of Study is exceedingly valuable and should be in constant use by the teachers of Washington. It is filled with suggestions that will help any teacher. Published by C. M. Parker, Taylorville. Price, 25 cents.

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MEMORANDA.

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This Manual is the property of

School District No.....,

..... County.

GIFT

TEACHERS' MANUAL

FOR THE

ELEMENTARY SCHOOLS OF WASHINGTON

Supplement No. 2

Manual and Household Arts

By B. W. JOHNSON, Director of Manual Training
and MRS. ELLEN P. DABNEY, Supervisor
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MANUAL ARTS.

EIGHTH GRADE.

(Suggested Course for Boys and Girls.)

"Education is the conscious effort on the part of society to organize its life, to the end that the pepole may be one body, wherein each may perform his separate office, at once, for his own good and for the good of all."—*Quotation.*

"Education comes through what the child does, and says, and thinks, and feels in the presence of the environment which the teacher supplies. The teacher teaches the child; the child educates himself. In being taught, the child is passive; in being educated, he is active. The thing to be stressed is that teachers educate more, even if to gain the time necessary for it they have to teach less. Education is self-expression, not impression alone. Every impression made by teachers upon pupils should be followed by expression in some fashion from the pupils."—"*Philosophy of Education,*" *Herman H. Horne.*

AIM OF THE MANUAL ARTS.

The purpose of this work is to give educational direction to the child's natural constructive tendencies by using forms that are of interest to the pupil. These "forms" should be based upon interests arising from life in home and school, in industry and in his play. The forms chosen should come to the pupil as problems in construction to be solved by him, and in the solution of which he will acquire skill, the power to create, and an appreciation of the constructive work in the world about him.

This diagram form of the schedule (see pages 6, 7 and 8) is intended to more closely direct the teacher in the accomplishment of this aim.

In the column "To Teach" are grouped in constructive sequence the principles and related processes that must be learned in order that the child might have proper means for putting into construction form his awaking ideas.

Under the next heading, "Means," the teacher should select a "suitable form" in which is involved the processes or principles to be taught and by means of which the teacher can illustrate these processes to the class, and the class in following out this instruction make the "form," and then by this experience better understand, the way it is done, why it is so constructed, the skill and workmanship

necessary to do the work well and also the value of time and the worth of material. All these elements are fundamental to an appreciation of similar constructive efforts in life about him.

Great care must be taken to make it clear to the pupil that the purpose of the process is to accomplish some definite end, and to lead the pupil to reason out the further application of this knowledge. Knowledge is for use. Additional power is sought, as well as accurate results.

Now, class work should develop in the pupil power to do *individual work*. This he is now ready to do, for in the class he has learned how to use the tools and materials and to see the completed whole from a drawing in the flat. The next step then, indicated by the numbers 1, 2, etc., is to offer for the individual to choose from a number of projects or problems similar in constructive principles to the "class" or practice form used to teach all the children the application of certain tools and processes. These projects are indicated under the heading "Application in Constructive Problems." Here, as each child completes his class piece, he at once selects a new problem, to apply what he has learned in solving his own particular problem.

These numbers indicated the direction of the pupil's progress and *not* the series of lessons. A number of lessons will often be required in the working out of these problems.

This step in the pupil's progress is the most important one. Out of this should come the habit of successfully meeting new problems, new situations, a power to determine what to do and then do it—"initiative."

As a further guide in determining what problem to offer him for individual selection, the three basic motives or interests that determine our selection of life's needs,—Home and School; Industrial, Mechanical; and Play,—are indicated in columns, and under each is placed the constructive problem that more nearly supplies that need. The child's interests indicate the line of greatest effort. This division will further help in keeping our course from becoming onesided or narrow, by reason of the interests stimulated or awakened.

The column "Materials" indicates what materials are required for the various exercises. The teacher should discuss with the class the fitness of the material for the purpose intended; how to care for it; what it costs; how produced. Ideas of economy are thereby engendered; some knowledge given of the great industries that maintain thousands of people.

The column "Drawing Required" is to indicate the method of presentation to the class and the drawing required of the pupil. It is very necessary that the pupil continually see constructive form represented in the flat, and thus become familiar with how to express himself in constructive drawing.

If understood, this method gives greater freedom to both teacher and pupil: To the teacher, in that the field is not restricted and the shaping of the course may be adapted to individual and local needs; to the pupil, in that he may work as rapidly as his skill and interest dictates and his own ingenuity devises. Thus the slow pupil will not lose any of the instruction by making only the simplest forms.

Care should be taken that the pupil does not drop back in his choosing, but selects a form or model (his own or the one suggested) of the same general type as the "Practice Piece" given to instruct the whole class.

Finally, this course presupposes a trained teacher who will take up the work in the order given, but will select from this course according to local need and conditions the best means for teaching the principles here involved.

BENCH WORK SCHEDULE.

(See explanation of schedule under "Aim.")

EIGHTH GRADE.

TO TEACH.	MEANS.	APPLICATION BY THE PUPIL TO SELECTED PROBLEMS OF CONSTRUCTION.				
	Class Form	*Home and School*	*Industrial Mechanical*	*Play, Imitation Play, Utility*	*Materials* Kinds, fitness, cost, care, how and where produced.	*Drawing Required.*
I. "Laying out" tools: Rule, try-square, gauge. Use of the saw, plane, brace and bit and chisel. Measuring, squaring, gauging. Rules for planing, sawing, boring. Care of and sharpening tools. Sand papering.	(1) Exercise for saw, plane, brace and bit.	(2) Hat rack, knife sharpener, plant trellis, plant stand, stool.	Tool rack, counting board.	Indian club or hunting knife, teeter board.	Fir and spruce.	Shop work preceded by one or more lessons in mechanical drawing. Pupils to draw full size "class form" by dictation.
II. Forms of construction—Joints: Butt, lap, half-lap, mortice and tenon, housed. The use of fastenings: Gluing, doweling, nailing, screws. The use of finishes: Oil, wax, shellac.	(3) Construction: Butt and lap joints, nails and screws.	(4) Nail boxes, knife boxes, flower boxes, tabouret, ironing and sleeve boards, dish-drain board.	Bench hook, water wheels, bridge and roof tresses.	Child's swing seat, club swinger, wind wheels, simple wagons, gun rubber, gun bow, propeller boats.	Fir, spruce, cedar. Nails, sizes, etc. Screws, sizes, etc. Sandpaper.	Pupils make drawing from large copy, working full size before any construction.
	(5) Construction continued: Half-lap mortice and tenon, gluing, doweling, group problems.	(6) Simple furniture, table-chair, bench, desk, etc.	Trap nests, animal houses, chicken furniture, boat building.	Sleds, gymnastic apparatus, canoe paddles.	As above, oil, paint, shellac, wax.	Pupil makes mechanical sketch from joint, then draw full size mechanically. Detail drawing of parts before construction.

NOTE: Other problems may be added by teacher or pupils if suitable to the group. The pupil should always progress in his choosing. Detail drawings and directions for above problems may befound in the following references: "Problems in Woodworking," by M. W. Murray, Manual Arts Press, Peoria, Ill., 75 cents; "Problems in Furniture Making," by F. D. Crawshaw, Manual Arts Press, Peoria, Ill., $1.00; "Problems in Mechanical Drawing," by Chas. A. Burnett, Manual Arts Press, Peoria, Ill., $1.00; "Woodworking for Beginners," by C. G. Wheeler, Putnam's Sons, $2.00; "Essentials of Woodworking," by Ira S. Griffith, Manual Arts Press, Peoria, Ill., $1.25; "Woodworking for Schools on Scientific Lines," by Bailey & Pallett, Manual Arts Press, Peoria, Ill., 75 cents; "Shopwork," The Manual Arts for Elementary Schools, by Hammock, D. C. Heath & Co. Magazines: "The Manual Training Magazine, Bi-Monthly, Peoria, Ill., $1.50; "The School Arts Book," The Davis Press, Worcester, Mass., $1.50. Catalogues: Hardwood, furniture, paint and manufacturing houses supply excellent catalogues for the asking.

COOKERY SCHEDULE.—EIGHTH GRADE.

AIM: To Teach Simple Elements of Food Values and Some Simple Fundamentals of Cookery.

TO TEACH.	CLASS WORK.	MATERIALS.
Relation of food to human body. Classes of foods and their uses in the body.	Recitation. Grouping of foods by composition as determined from government bulletins.	Peabody's or other physiology dealing with foods. Government Bulletin 142.
Dexterity. Accurate measurements. Control of heat.	Measuring liquids and dry material to verify table of measurements. Management of stove, determining amount of fuel.	Table of measurements. Meal, flour, sugar, water, Heating stove with flat top or small cook stove.
Source and nutritive value of starch and sugar. Time and temperature required to cook starchy material. Use of sugar.	Cooking of cereals. Cooking of dishes thickened with flour or starch. Stewed fruits.	Double boiler. Sauce pan. Breakfast cereals. Milk, starch or flour. Rice, hominy, vegetables, etc. Sugar, fresh and dried fruits.
Methods and temperature of cooking vegetables.	Boiling, simmering, baking of such vegetables as may be convenient. Making of cream soups.	Berlin kettle, or sauce pan. Potatoes, dried beans, peas, squash, pumpkin, etc. Government Bulletins 256, 121 and 295.
Low temperatures for proteids. Slow, long cooking of tough cuts of meat.	Cooking of eggs and egg combinations. Soup meats. Stews and cheap cuts.	Government Bulletins 128 and 293. Double boiler, sauce pan, frying pan, Berlin kettle. Meat.
Care of food material.	Class recitation. Study of government bulletin. Care of materials and lunch baskets at school.	Government Bulletin. Farmers' Bulletin 375.
Doughs and batters. Leavening by air, baking powder, soda and acid.	Separating gluten from flour. Making popovers, muffins, biscuits.	Government Bulletin 389. Oven. Flour, soda, baking powder, milk.
Leavening by yeast.	Study of yeast. Making light bread.	Yeast flour, milk or water.

References:

Farmers Bulletins.

No. 142—Principles of Nutrition and Nutritive Value of Food.

No. 375—Care of Food in the Home.

No. 391—Economical Use of Meats.

No. 256—Preparation of Vegetables for Table.

No. 34—Meats, Composition and Cooking.

No. 128—Eggs and Their Uses as Food.

No. 363—Uses of Milk as Food.

No. 63—Care of Milk on the Farm.

No. 121—Beans, Peas and Other Legumes as Food.

No. 295—Potatoes and Other Root Crops as Food.

No. 2-3—Canned Fruit, Preserves and Jellies.

No. 389—Bread and Bread-Making.

Elements of the Theory and Practice of Cookery—Fisher and Williams.

Chamberlain's How We Are Fed.

Home Science Cook Book—Lincoln & Barross.

SEWING SCHEDULE.—EIGHTH GRADE.

AIM: To Teach Elements of Plain Sewing.

TO TEACH.	CLASS WORK.	MATERIAL.
Control of material. Making of the different stitches; basting, running, hemming, backstitching, over-casting.	Practice each kind of stitch on piece of muslin.	Unbleached muslin, needle, thread, thimble.
Application of stitches. Meaning of term warp, woof, selvage, bias.	Making of school bag or button bag. Hemming towel.	Crash or other material.
Felling and French seaming.	Laundry bag or pillow case, simple garment of underwear.	Muslin, long cloth, print.
Blanket stitch. Buttonhole stitch. Sewing on of buttons.	Practice piece. Scallop doily or towel. Buttonhole in some garment. Sew on buttons. Making a shirtwaist.	White muslin. Toweling or crash. Waisting.
Repairing. Darning. Patching—hemmed, overhand, stitched.	Practice on piece of old stocking leg. Darning stocking or sock. Practice on pieces of gingham. Patching child's own clothes.	Worn stockings. Gingham. Any worn or torn garment.

Reference: A Sewing Course, Woolman; Government Bulletins on Flax, Cotton, Wool; Chamberlain's How We Are Clothed.

MEANS

The Teacher: The best results are only obtainable in this grade with a separate room or rooms, specially equipped, and a well-educated and well-trained teacher. The age of the pupil gives him a capacity for a rather high grade of performance. The processes and the problems must be worthy of and command his highest efforts. The teacher is the all-important requirement. The amount and variety of the equipment, the character of the work planned and carried out, its relations to the other school work and its vitality for the pupils and the communities' needs are all dependent upon the teacher. Such a teacher plans the course to meet the educational, financial and social conditions of the community in which he or she works. A good salary is necessary. If the number of pupils to receive instruction is not sufficient to occupy the full time of such a teacher, he or she may teach part time in the regular school work, or two or more adjacent districts may employ the same special teacher for part time in each school.

THE EQUIPMENT

References: Economics of Manual Training, by Louis Rouillion, Manual Arts Press, Peoria, Ill., $1.50; Teachers' College Record, May, 1909, Columbia University, New York, 30 cents.

Sewing: The sewing course does not require a special teacher, nor a special equipment or room. It is usually taught in the regular classroom by the class teacher to the girls when the boys are away at bench work.

In many of the larger towns of the country the sewing is taught by the cooking or a special teacher. This is desirable, resulting in more and much better work being done. It is, of course, correspondingly more expensive.

Cookery and Bench Work: The cookery and bench work courses require special equipments and should be used in specially fitted rooms. Where the school is small and another room cannot be had, an equipment to be used in the classroom is given for a course in cookery. (See Appendix and figures Nos. 1, 2, 3 and 4). Such an arrangement for bench work is not feasible, as the school desk is too low for the use of carpenter's tools. It is possible in such an emergency to have a few benches in one side of the room. The equipment lists that follow are arranged for units of 6; a class usually numbers about 24.

Combination Centers: Another arrangement economical of the pupil's time and of room space, and also in first cost, where the classes are the usual size, is a combination center. The equipment in this arrangement is so arranged that the same room and the benches are used by the boys and girls at different times. (See Figures Nos. 5, 6, 7 and 8).

The floor plan given (Figure No. 8) shows the arrangement of such a room. Gas or oil stoves may be used between the benches. When the lessons in serving are given the dining table is set in the open space

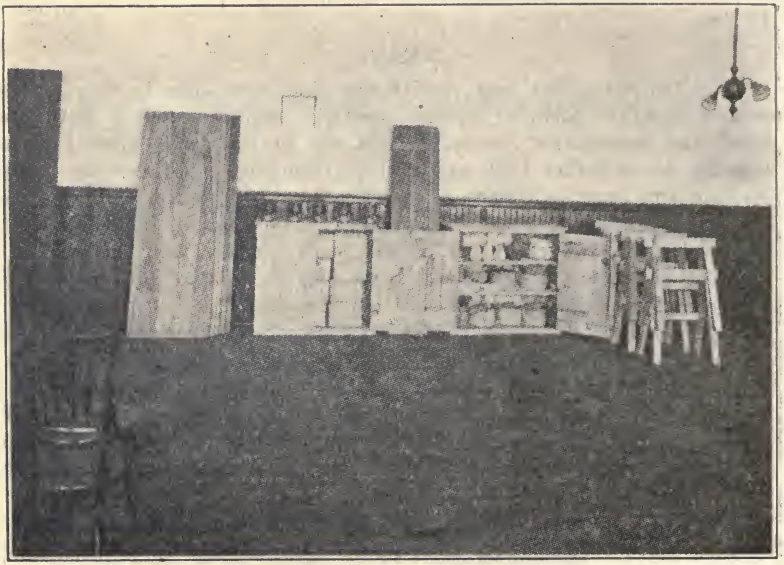


FIG. 1. Macdonald Institute, Rural School Equipment.

FIG. 2. Macdonald Institute, Rural School Equipment.

FIG. 3. Packing-Box Equipment for Cookery, Teacher's College, Columbia University.

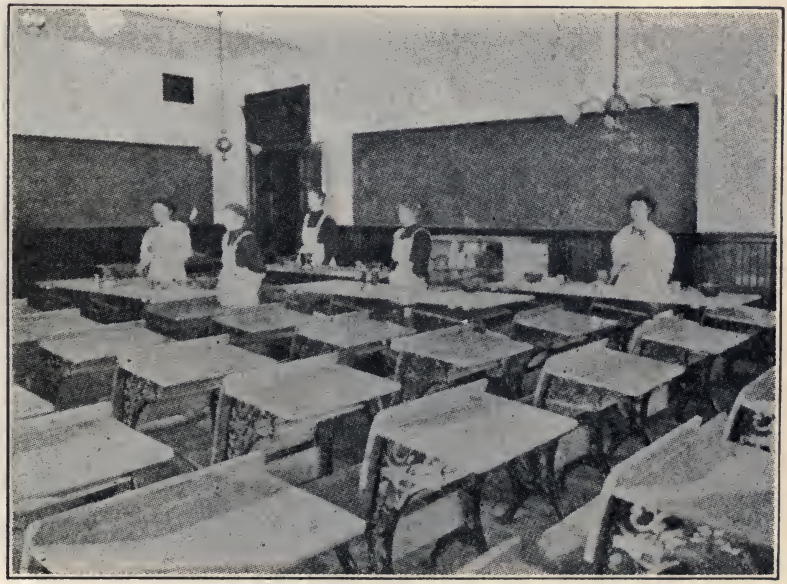


FIG. 4. Macdonald Institute, Rural School Equipment.

FIG. 5. Combination Center. Benchwork Class.

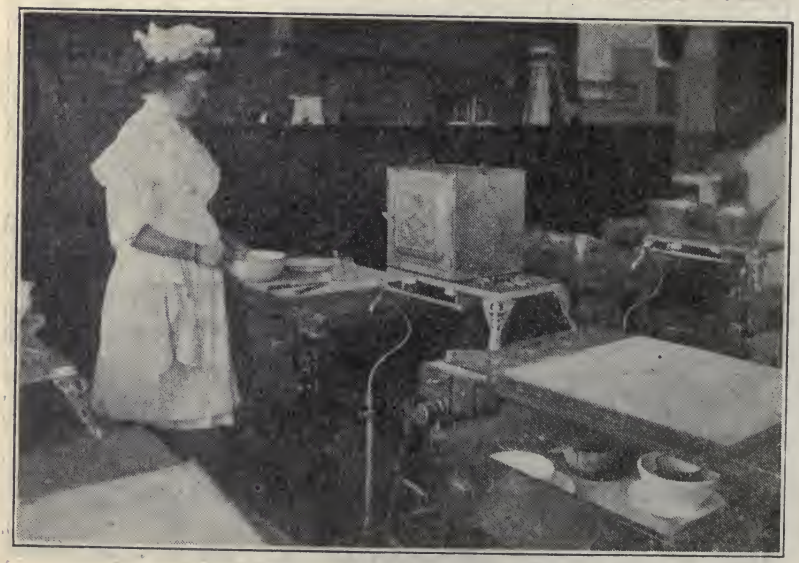


Fig. 6. Combination Center. Cookery Detail.

Fig. 7. A Combination Center. A Class in Cookery in a Portable, Using Oil Stoves.

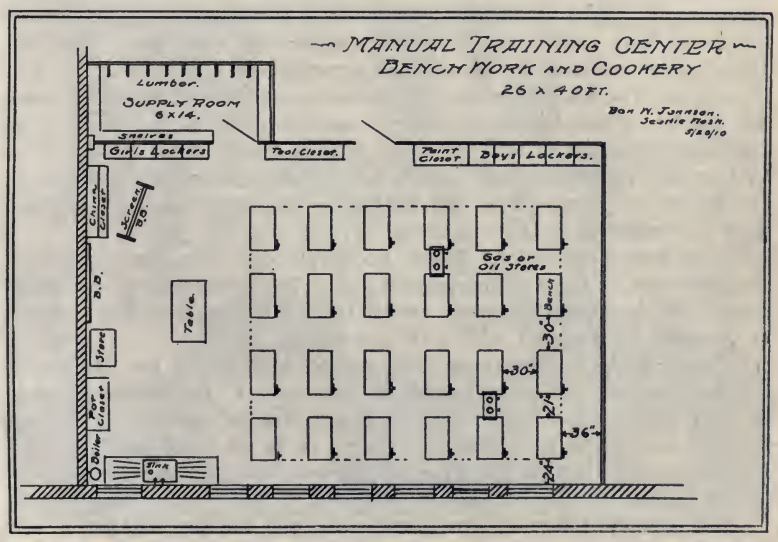


Fig. 8.

in the front of the room and is screened off from the rest of the room by suitable folding or hanging screens. See (Fig. 13).

Bench Work Center: This floor plan would be the same for use as a bench work center separate from cookery. The bench is the same, except the drawer and lower compartment may be omitted if the bench is used for woodwork only (See Fig. 14). This bench is of fir throughout and can be made by a local carpenter or the boys themselves. The leading school supply houses furnish excellent benches of hardwood, but more expensive. A satisfactory bench much cheaper than the above could be built continuous in a rough manner similar to the ordinary carpenter's bench. A well-made bench with a good vise is self-evident economy, and built singly is an economy of floor space for the greater freedom and control of the class.

The other furniture given in the accompanying drawings may be modified to meet varying conditions.

Cookery Center: When a separate room, the cooking tables are preferably built for that purpose and arranged to form three sides of a square, with gas or oil stoves on the inside edge of the table. (See Figs. 11 and 12). The photographs show a number of arrangements according to conditions to be met with. Cooking tables are now listed in the catalogues of school supply houses. The drawing given (Figure No. 9) gives the details of a table built for four pupils. The bar gridirons may be replaced with a gas hot plate and wooden legs on the tables replace the iron pipe legs shown.

SPECIFICATIONS FOR A MANUAL TRAINING OR COOKING ROOM.

Size: The area should be from 900 to 1,000 square feet for a class of twenty-four pupils, the accepted number for one class. (See accompanying drawing for details and arrangement).

Light: The windows should be numerous and of full length, if possible, placed in two adjacent sides or opposite sides of the room. The light should shine on the front and left-hand end of the bench or on both ends. Artificial light should be provided, preferably electric, in six groups or clusters near the ceiling, or one lamp properly guarded may be suspended over each bench.

Heat and Ventilation: These should receive the same care and consideration as in any other schoolroom. The temperature of a workroom may be several degrees cooler than the classroom, and should be abundantly supplied with pure, fresh air.

Supply Room: This room may not be adjacent to the shop-room, but is preferably so; as indicated, 100 square feet is sufficient. It may be long and narrow, as it is wall space that is desired. Abundant shelving should be provided and lumber racks as indicated for standing the stock on end on the floor and between the pegs placed vertically to the wall.

The teacher's closet is for private use and for the storage of any finished work desirable to keep. It should be provided with hooks and shelves and doors with locks.

Fig. 11. Domestic Science, Olympia High School.
(Equipment made by the boys in the manual training classes.)

Fig. 12. A Class-Room Used as a Cookery Center.
(Speyer School, Columbia University.)

Water: A sink or washbowl with running water is very necessary. Hot water is then possible with a range with water back, or a separate hot water heater may be used.

Blackboard: A blackboard may be fastened to the wall where it may be easily seen by the pupils; or a movable board may be used as shown, combining a screen and blackboard in one. (See Fig. 10).

Exhibit Board: The screen side may be used also for a display board of finished work, though it is better to have a separate exhibit board fastened to the wall and covered with a natural or dark brown colored burlap. This is a valuable adjunct to a manual training room, if well taken care of and the best work placed upon it, as a source of suggestion and inspiration to the pupils.

The Furniture of the Room: Is indicated on the floor plan (Figure No. 8) and in the accompanying drawings.

In addition to this, a dining table large enough to seat six, with six plain dining chairs (See Fig. 14); 24 stools 24 inches high are required for the use of the girls. They are not needed in a bench work center if provision is made for the boy to stand up while drawing.

Finish of Room: It should be finished as any other desirable classroom. If a basement room is used, select one having the largest windows, with the best arrangement. A wooden floor is much the preferable for pupils and teacher and admits of easily fastening the benches to the floor. The passage to the room should be carefully screened from the sanitaries.

Estimated Cost for a Special Room for Manual Training and Cookery:

Work bench, from	$6.00 to $10.00	Dining table and six chairs.	$12.00
Lockers (each)	7.00	Stools (each)	.75
Tool closet	12.00	Paint and oil closet.....	3.50
China closet	25.00	Store room (shelving, etc.)	15.00
Pot closets (each).....	10.00	Plumbing, from $50.00 to	100.00
Blackboard screen	6.00	(Including sink and piping, boiler, etc).	

TOOLS AND UTENSILS.

BENCH WORK TOOLS.

Set for Each Bench: (Cost, about $5.00).

1 14-inch iron jack plant, No. 5.
1 10-inch Bishop's handy saw.
1 6-inch Stanley graduated all-iron try square.
1 Stanley patent adjustable point marking gauge.
1 Stanley No. 18, 2-foot, 2-fold boxwood rule.
1 each ⅜-inch and ¾-inch firmer short socket chisels, handled and sharpened.
1 Swedish Sloyd knife.
1 9-ounce all-bristle bench brush.
1 Springfield drawing kit, No. 2 (cost, about $5.00).

Set of general tools sufficient for six pupils and should be duplicated for each additional six in a class, except in bit sets, which should be added to in assorted sizes as required. (Cost, about $20.00).

1 set 13 auger bits, ¼- to 1-inch, inclusive.

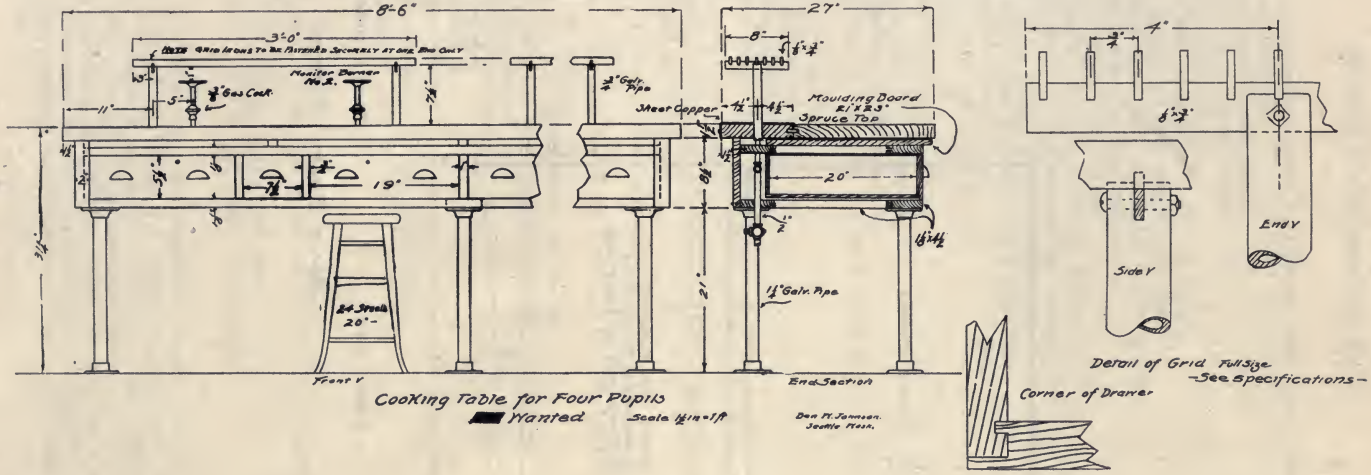
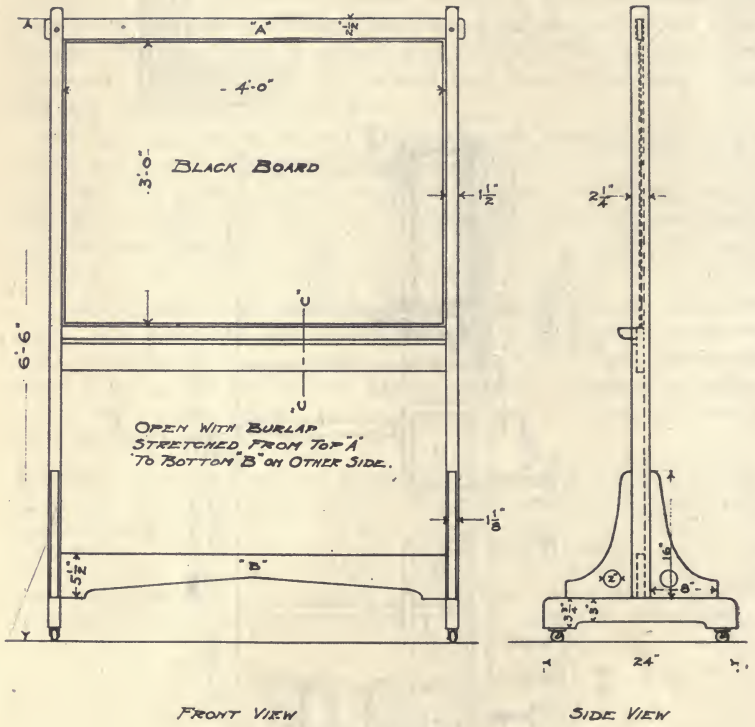

8'-6"
3'-0"
Grid Irons To Be Fastened Securely at One End Only
Heater Burner No. 2.
¾" Gas Cock
¾" Galv. Pipe
Sheet Copper
Moulding Board 2½ x 2½ Spruce Top
27"
8"
20"
19"
24 Steel 20"
1½" Galv. Pipe
Front V
End Section
Cooking Table for Four Pupils
Wanted
Scale ½in = 1ft
Detail of Grid Full Size
-See Specifications-
End V
Side V
Corner of Drawer

Fig. 9.



BLACK BOARD SCREEN

Fig. 10.

1 8-inch Atkins' ratchet brace (alligator steel jaws, plated heads).
1 rosehead countersink.
1 forged steel screwdriver bit.
1 razor-blade 8-inch draw knife.
1 No. 52 iron spoke shave.
1 26-inch rip saw, Atkins No. 53, or equal.
1 22-inch cross-cut, Atkins No. 53, or equal.
1 6-inch coping saw with one dozen extra blades.
3 Atkins silver steel cabinet scrapers.
3 10-inch ½-round cabinet files.
1 steel, 24-inch by 16-inch, framing square.
6 6-inch malleable iron clamps.
6 36-inch Sheldon spring steel bar clamps.
1 2-inch by 6-inch combination India oil stone.
1 3-inch bronzed oil can.
1 each gimlet bits 1-8, 5-32, 3-16.
1 drill bit, 3-16.
1 2¾-inch by 6-inch mallet.
2 4-inch champion screwdrivers.
3 No. 13 Maydole hammers.
Set of general tools required for each class of 24 or less pupils.
1 saw vise.
1 No. 95 Morrell saw set.
1 grindstone or emery grinder.
1 pair cutting pliers, 6-inch.
1 pair turners snips, 10-inch.

Hardware:

The amounts are determined by the number of pupils and the amount of time they spend in this work.

Sand paper (quires), Nos. 0-1 and 1½.
Cotton waste (lbs.).
Wire brads, ½-in. No. 20, ¾-in. No. 20, 1-in. No. 18, 1¼-in. No. 18.
Glue, shell or liquid.
Nails, common and finish, from 2d to 10d.
Screws, flat-head and round-head, from ¾-in. No. 7 to 2-in. No. 12.
Screw, eyes and hooks.
Tacks, common and thumb.
Wire, soft iron.

Paints and Oils:

Coal oil, linseed oil (boiled), turpentine.
Denatured alcohol (for shellac).
Shellac, orange (in shell).
Floor wax.
Putty.
White lead, and a few simple colors in 1-lb. cans (ground in oil).
Wood stains.
"Three in One" oil in bottles.
Brushes, 1½-in. or 2-in. for paint and shellac.

Lumber:

The sizes and amounts are dependent upon local conditions. It should be good, clear, soft and dry material, surfaced four sides for the most part. It should be native material, when possible; in thickness from ⅜-inch to 1¼-inch, in varying widths and suitable lengths for convenient handling and storing. Hardwoods, the most commonly found in furniture and cabinet work, should be used to acquaint the boy with the difference in use, treatment, and cost of such materials, and their habitat.

COOKERY UTENSILS.

(One utensil for each pupil):

Plate, white enamel, 8½-inch.
Bowl, yellow earthen, 1½-pint.
Bowl, white enamel, 1-pint.
Cup, measuring tin, ½-pint.
Cup, measuring glass, ½-pint.
Cup, custard, earthen.
Pan, sauce, hdl., 1½-pint.
Pan, frying, 6-inch (00 Acme steel).
Pan, dish, 8-quart.
Fork, steel.
Knife, steel.
Knife, paring.
Spoon, table.
Spoon, teaspoon.
Spoon, wooden, small.
Cover, tin for sauce pan.
Pie tin, 5-inch shallow.
Strainer, 4-inch.

(Cost for one pupil about $2.50).

(One utensil for two pupils):

Pans, bread, 3-inch by 4-inch by 2-inch.
Pans, milk, enamel, 5-inch.
Pans, square shallow, 6-inch by 6-inch.
Pans, muffin, 6-hole.
Rolling pins, 12-inch.
Spatula, 5-inch.
Biscuit cutter (small).
Scrub brush.
Egg whip-wire.
Dover beater.
Soaper, white enamel, without back.
Oven, No. 0, 9-inch by 9-inch by 12-inch.
Two-burner gas plate or oil stove (blue flame. Cost, about $2.00 to $8.00).

(Cost for two pupils, about $2.00, not counting stove).

Utensils for General Use:

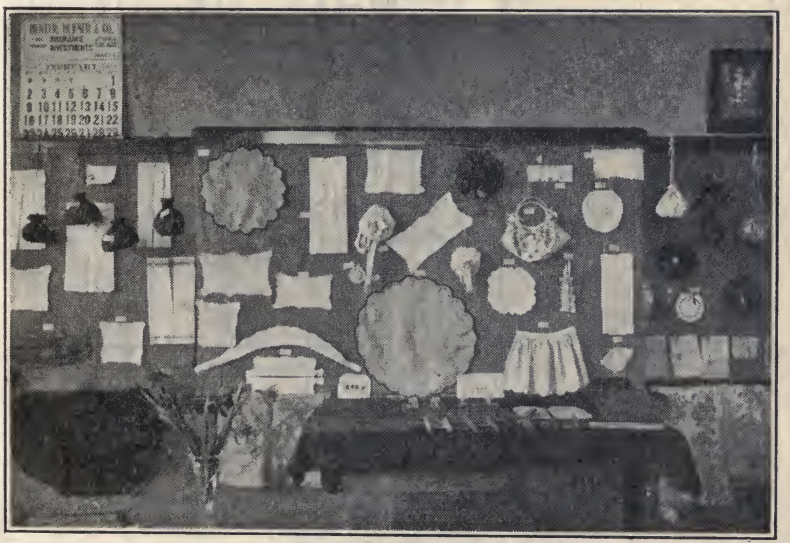
1 food chopper, Universal No. 1.
1 clothes drier, Eureka.
1 coffee pot.
3 jars, stone, 1-gallon, covered.
24 jars, Mason, 1-pint.
12 jelly glasses.
1 kettle, Berlin, 8-quart.
1 tea kettle, 6-quart.
1 mop with pail, Erie self-wringing.
1 dust pan.
1 dripping pan.
1 garbage pail.
2 pitchers, white enamel.
2 plates, 8-inch, white enamel.
2 potato mashers.
1 scale, household, spring dial, 25-lb. (Cost about $25.00).
1 sifter, flour, cycle.
2 trays, 15-inch.
4 bowls, yellow, 3-quart.
1 can opener.
1 cork screw.
1 knife, bread.
1 knife, butcher.
1 knife, cake.
1 knife, French.
1 steel knife sharpener.
1 spoon, large wooden.
2 spoons, large enamel.
1 salt box.
1 skillet, 14-inch.
1 double boiler, 4-quart.
1 roasting pan.

1 cook stove with water back (if running water is available). Cost from $15.00 to $35.00. (The hot water boiler, 30 gallons, is usually included in the plumbing).

Dining Room Service:

2 table cloths.
24 napkins.
6 knives, Wm. Rogers or equal.
12 forks, Wm. Rogers or equal.
6 dessert spoons, Wm. Rogers or equal.
12 teaspoons, Wm. Rogers or equal.
1 set semi-porcelain dishes, white. (Cost, about $20.00).

Fig. 13. A Sewing Lesson.



Domestic Arts Exhibit.

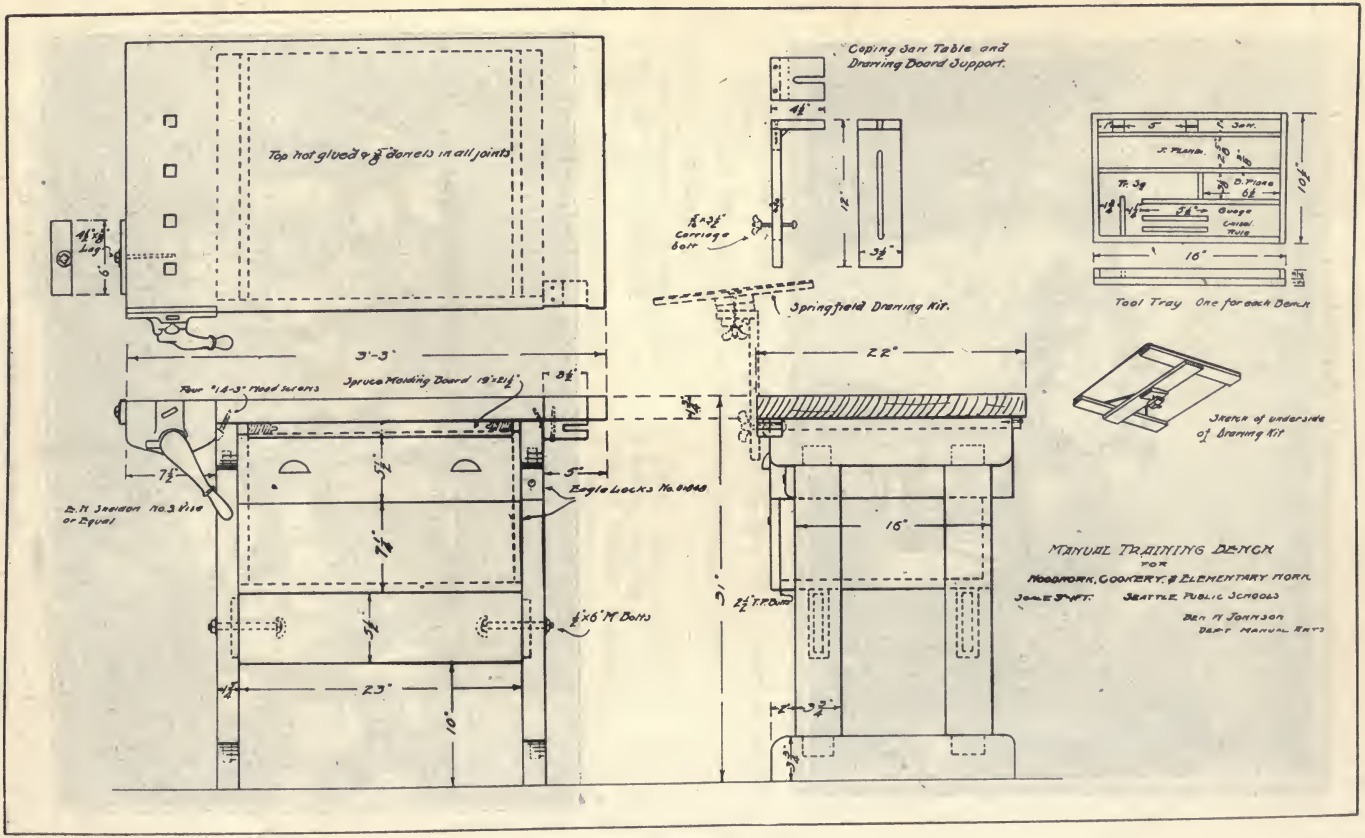
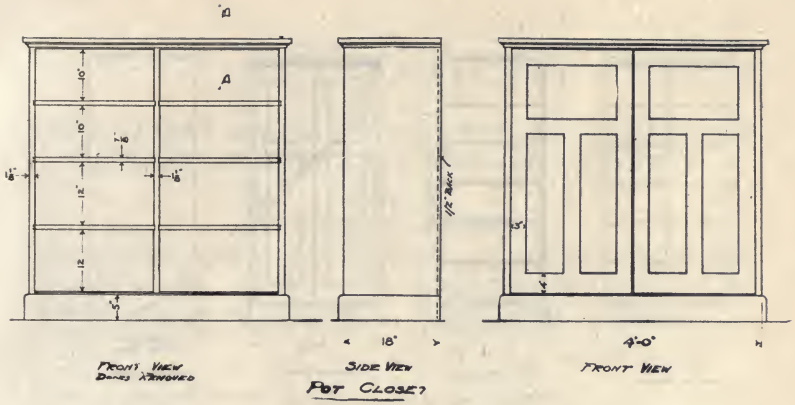
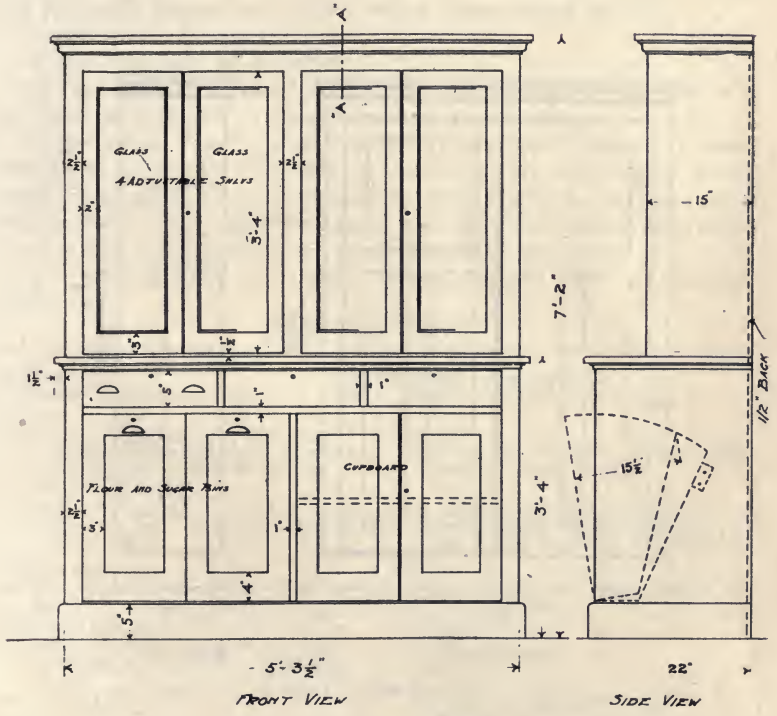
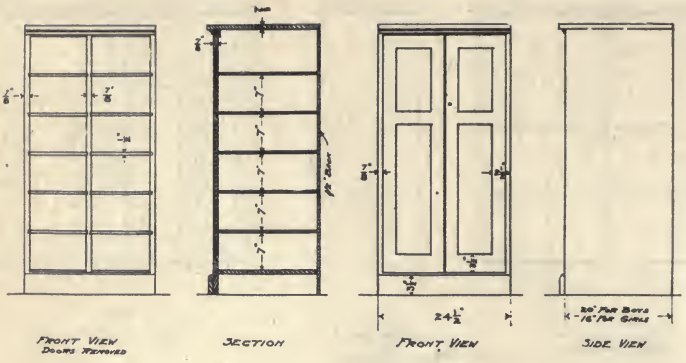

Coping Saw Table and Drawing Board Support.
Top not glued & 3/8" dowels in all joints
Carriage bolt
Springfield Drawing Kit.
Tool Tray One for each Bench
Sketch of underside of Drawing Kit
Four 1-3" Wood Screws
Spruce Molding Board
Eagle Locks No. 0148
E. H. Sheldon No. 3 Vise or Equal
3/4"x6" M. Bolts
MANUAL TRAINING BENCH
FOR
WOODWORK, COOKERY & ELEMENTARY WORK
SEATTLE PUBLIC SCHOOLS
BEN H. JOHNSON
DEPT. MANUAL ARTS

Fig. 14.



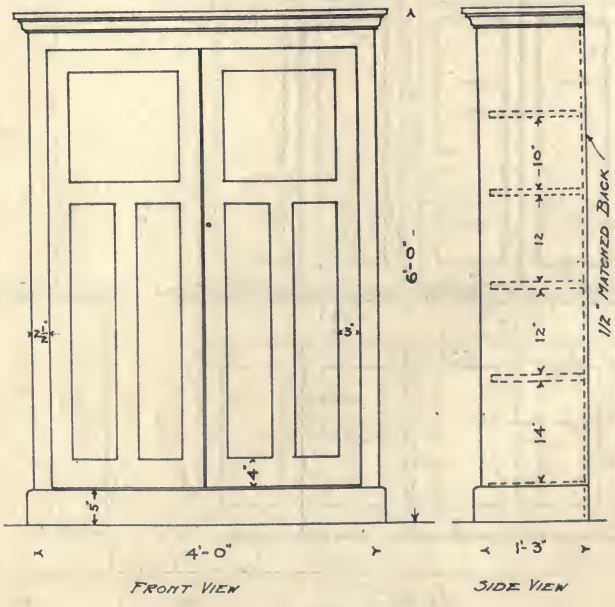


Furniture for Cookery Center.



BOYS AND GIRLS LOCKERS

Furniture for Cookery and Benchwork Centers.



TOOL CLOSET

Furniture for Benchwork Center.

APPENDIX.

A RURAL SCHOOL COOKERY COURSE FOR THE RURAL SCHOOL THAT CANNOT AFFORD THE REGULAR EQUIPMENT.

COOKING EQUIPMENT.

Dry goods box with curtains and shelves for utensils. (See Fig. 3.)

1 Berlin kettle.
1 large sauce pan with cover.
1 small sauce pan with cover.
1 dish pan.
1 dripping pan.
2 large enamel bowls.
2 small enamel bowls.
1 wire toaster.
4 small bread pans.
1 ladle (enamel).
1 large spoon (enamel).
1 large fork.
1 French or butcher's knife.
1 egg whip.
1 double boiler.
1 white enamel pitcher.
1 tea kettle.
2 sets gem pans.

For serving—Plates, cups and saucers, bowls (white enamel or semi-porcelain); knives and forks, spoons.

(One teakettle, one Berlin kettle, one saucepan, with spoon, knife and fork will answer for a start where more cannot be had).

A homemade fireless cooker.

A box cupboard for supplies.

In the hands of a resourceful teacher, the equipment, meager as it is, would be sufficient to transform some communities.

If the school board would furnish (Figs. Nos. 1 and 2) a small cook stove, sawhorses with smooth board tops for work tables, a cupboard for supplies, a few more utensils to work with, a very interesting and profitable course might be given and the entire school have something warm and palatable for lunch each day.

A few suggestions as to what may be prepared with the foregoing equipment:

COOKERY COURSE.

SOUPS— Tomato, potato, pea, corn.	SOUPS (with stock)— Broth, vegetable, etc.
MEATS— Soup meat, brown stew, beef stew with dumplings, chicken smothered, chicken stewed with dumplings, chicken fricassee.	EGGS— Soft cooked, poached, stuffed, souffle, omelet, cheese souffle.
Potatoes, carrots, onions, beans (dried), peas (dried), pumpkins, squash, etc.	EGG AND MILK COMBINATION— Boiled custard, bread pudding, tapioca cream, puddings, Christmas fig.
POTATOES— Plain boiled, mashed, creamed, scalloped au gratan, cakes.	RICE— Plain, cooked with milk, cooked with fruit, pudding.
WHITE SAUCE— Toast and white sauce, macaroni, scalloped and creamed vegetables.	FRUITS— Fresh fruits. Dried fruits.
SALAD DRESSINGS— —and sauce.	SALADS— Cabbage, potato, beet, apple and celery.
BREAD— Baking powder or soda and sour milk breads. Muffins—corn, graham. Whole wheat flour biscuits. Tea biscuits.	Yeast bread. Plain light bread rolls.

WHAT OTHERS HAVE DONE.

TEACHERS' COLLEGE, COLUMBIA UNIVERSITY.

Packing Box Equipment.

(Teachers' College Record, May, 1909.)

Designed and used by students, Department of Domestic Science, Teachers' College, Columbia University. This equipment is intended to show what may be done in a district school where available funds are limited. (Fig. 36).

The number of tables that could be used depends, of course, upon the space in the schoolroom. If the space is small, even one table would answer the purpose, if the teacher is sufficiently ingenious to fit in the work of cooking with her other subjects. With a small equipment, two or three children could work at a time, say one or two days a week.

Packing boxes can be obtained in almost any neighborhood, and the painting, carpentry work and sewing done by the pupils in the school, thus making the cost very low. In the winter the heater might be used for cooking, if the top is flat.

UTENSILS FOR SIX PUPILS

(Prices from H. C. F. Koch, New York City, and the 10-cent store, 1907.)

Individual.	*Cost For one.*	*For six.*
1 white bowl, 1 qt.	$0.05	$0.30
1 measuring cup	.05	.30
1 granite pan	.10	.60
1 sauce pan	.05	.30
1 tin pail	.10	.60
1 steel fork	.05	.30
1 steel knife	.05	.30
1 tablespoon	.02½	.15
2 teaspoons	.01 2-3	.10
	$0.49 1-6	$2.95
1 oil stove	.70	4.20
1 asbestos mat	.05	.30
	$1.24 1-6	$7.45

For Class—

3 bread boards	$0.15	1 tea kettle	$0.50
1 rolling pin	.05	1 broiler	.20
3 baking powder can tops (for cookie cutters)		1 garbage can	.25
1 flour sifter	.10	2 pitchers	.25
1 large frying pan	.25	2 apple corers	.10
1 double boiler	.50	1 chopping knife	.10
1 quart kettle	.25	1 chopping bowl	.05
		6 muffin tins at 2c	.12

2 layer cake tins	$0.10
3 dish pans	.45
3 rinsing pans	.30
1 strainer	.05
6 china plates	.30
3 mixing bowls	.30
6 sauce dishes	.15
6 cups and saucers	.30
1 coffee pot	.25
1 teapot	.10
3 bread pans	.15
6 quart jars	.30
3 wooden pails with covers	.30
6 dish towels	.48
3 dish cloths	.15
3 hand towels	.15
1 broom	.15
1 dust pan	.05
1 brush	.10
1 scrubbing brush	$0.05
1 scrubbing pail	.10
1 Dover beater	.05
1 pepper shaker	.05
1 salt shaker	.05
1 colander	.10
1 baking dish	.10
1 bread knife	.25
1 coffee mill	.25
1 corkscrew	.10
	$15.50
Packing box table	1.00
Packing box cupboard	.50
	$17.00
Large blue-flame oil stove	10.00
	$27.00

MACDONALD INSTITUTE RURAL SCHOOL EQUIPMENT

Designed by Miss Grace Greenwood, of Macdonald Institute, Guelph, Canada. An effort has been made to carry out the plan of setting up an inexpensive class-kitchen equipment to illustrate what can be done in rural schools, or other places where gas stoves, plumbing, and separate rooms are out of the question. An equipment of trestle tables, cupboards, and utensils has been purchased and installed in one of the rooms left vacant by the Manual Training department. It is suitable for individual work with a class of twelve and is now being tested by use with a public school class. Following is a list of the equipment, showing the exact cost of each item.

Article.	*Cost.*	*Article.*	*Cost.*
12 bowls, brown	$0.85	12 strainers	$0.65
12 bread tins	.95	2 trays	.80
12 teacups and saucers	1.25	1 bowl, yellow	.25
12 tin measuring cups	1.25	1 bowl, yellow	.35
12 egg beaters	.30	1 bowl, yellow	.45
12 forks	.50	3 scissors	1.50
12 case knives	1.25	5 trestle tables	20.55
12 paring knives	1.25	6 frying pans	.90
12 plates	.85	3 tea strainers	.15
12 saucepans	1.68	3 match-box stands	.24
12 tablespoons	.50	1 emery knife	.20
24 teaspoons	.40	3 soap dishes	.25
12 wooden spoons	.60	12 pepper shakers	1.50
12 stewpans	2.40	12 salt shakers	1.50

Article.	*Cost.*	*Article.*	*Cost.*
1 bell	$0.50	3 cake tins	$0.35
4 lemon reamers	.40	4 graters	.40
6 stoves, kerosene	6.00	3 strainers	.75
12 plates, dinner	1.25	24 pattie pans	.20
6 plates, soup	.60	2 tin dippers	.40
4 jugs	.60	2 fiber pails	.70
1 jug	.45	1 colander	.35
1 butcher knife	$0.30	1 pail, enamel	.70
1 French knife	.60	1 pan, enamel	.18
2 spatulas	.80	3 tea kettles	2.70
6 teaspoons	.10	1 saucepan	.30
3 tablespoons	.13	1 saucepan	.25
4 brushes	.20	1 saucepan	.23
2 stove mitts	.50	1 saucepan	.30
4 asbestos mats	.20	1 double boiler	.85
1 corkscrew	.25	1 kettle, covered	.60
4 egg beaters	.60	*1 stove (to burn coal or wood)	30.00
4 wash basins	.92		
3 draining pans	.69		
4 dishpans	2.00	Total	$100.05
6 broilers	.48		

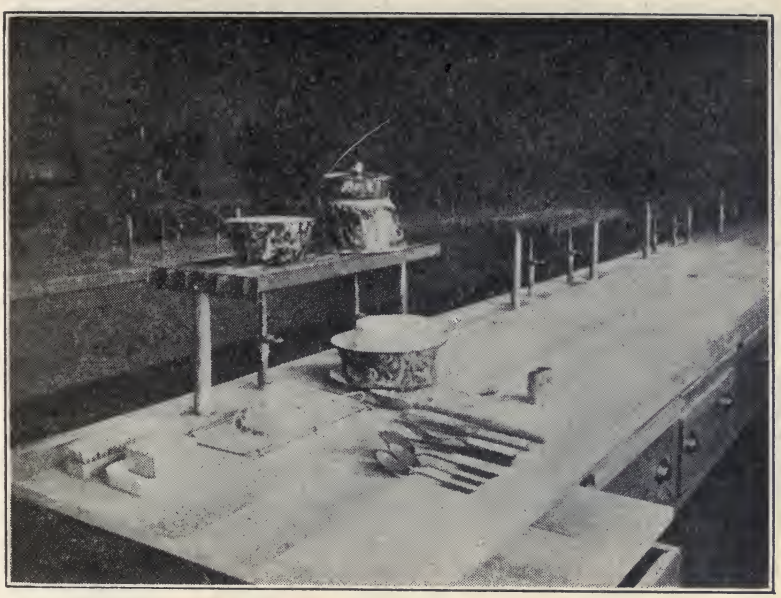
*The above may be replaced by a twenty-dollar wood stove or a ten-dollar two-burner coal oil stove.

The whole equipment is attractive, and is capable of modifications which will adapt it to the conditions of many schools.

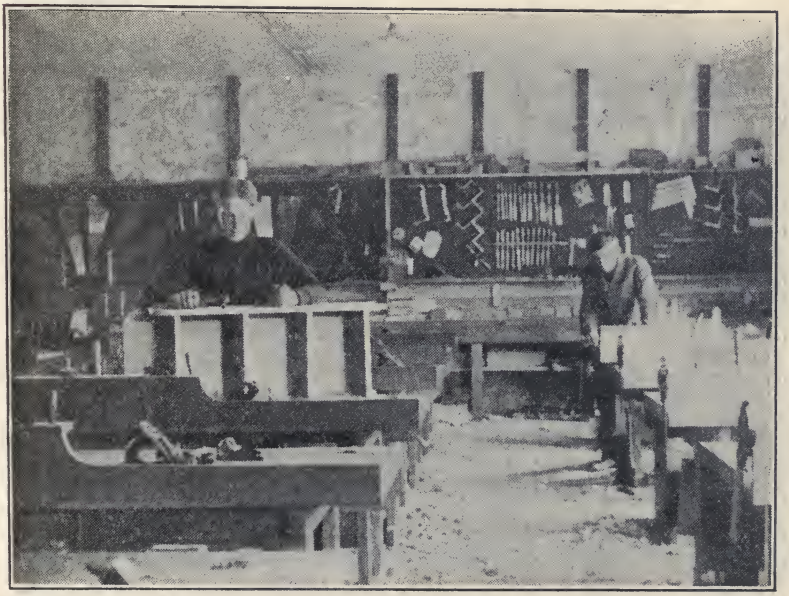
EQUIPMENT OF SPEYER SCHOOL (PRACTICE SCHOOL OF TEACHERS' COLLEGE, COLUMBIA UNIVERSITY)

Cooking table with drawers for 18, 18 individual stoves, 2 large stoves, utensils, and dining-room furniture (sink not included). Equipped, year 1902-3.

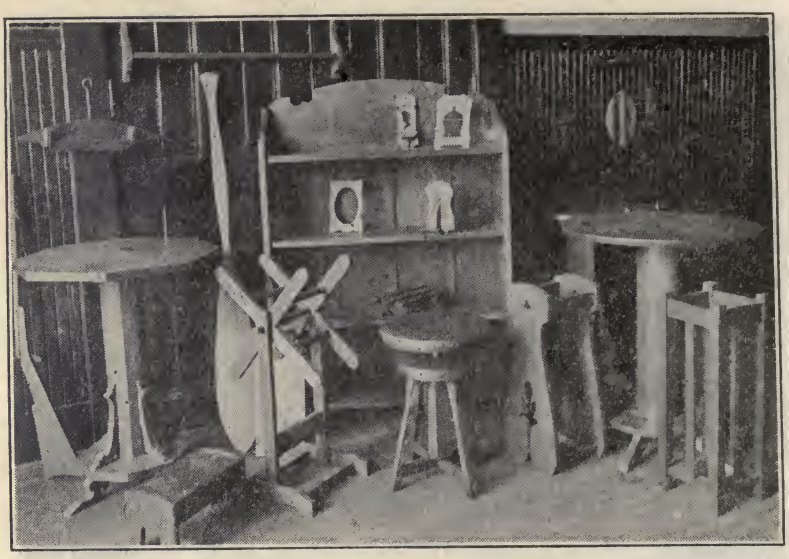
Cooking tables	$150.00
Stoves (small)	13.50
Stools	13.50
Gas range	17.50
Coal range	13.50
Dining room	25.00
Refrigerator	10.00
Linen and china	10.00
Burners and tubing, etc.	5.00
Utensils	98.00
Incidentals	10.00
	$366.00
Plumbing connection	30.00
	$396.00



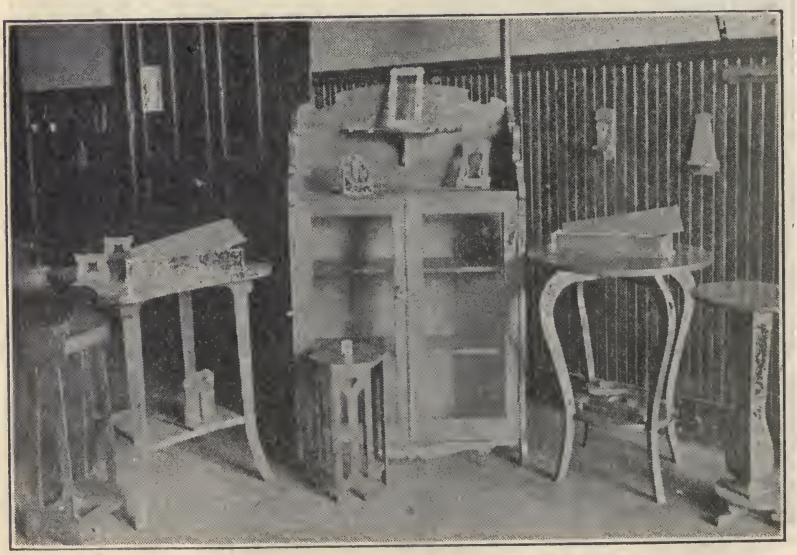
Domestic Science, Olympia High School.



Manual Training Benchwork, Olympia, Wash.
(The benches made by the boys in the manual training classes.)



Manual Training Exhibit.



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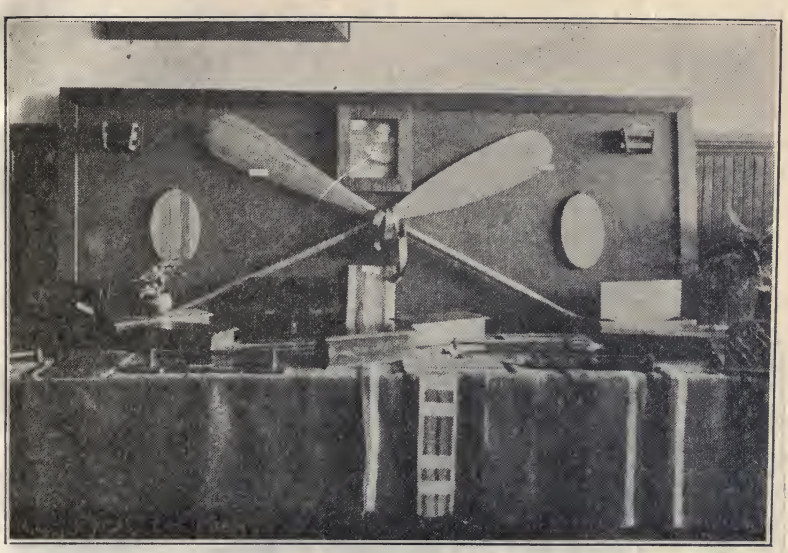

Manual Training Exhibit.

Manual Arts Exhibit.

Manual Arts Exhibit.

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